

Seventh Annual Student Scholars Symposium

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Students' Abstracts

Paper Presentations

Graduate Students Oral Presentations

Respiratory Syncytial Virus Uses Pattern Recognition Receptors to Activate Downstream Inflammatory Pathways

Caitlin Perry and Florah Mhlanga, Biology

Respiratory syncytial virus (RSV) is a deadly disease that causes severe respiratory infections in infants and children. It can also affect the elderly as well as immunocompromised patients. RSV can cause respiratory infections, pneumonia, or bronchiolitis resulting in mild to severe inflammation due to the release of various pro-inflammatory cytokines. Chronic infection is also possible with most RSV infections. RSV recognizes various pattern recognition receptors (PRRs). The PRRs recognize various pathogens in order to activate the innate immune system and are present on antigen presenting cells such as dendritic cells and macrophages. These PRRs include Nod like receptor proteins (inflammasomes), Toll-like receptors 2, 4, and Retinoic acid-inducible gene 1 (RIG-1), as well as adaptor protein Nucleotide binding oligomerization domain-containing protein 2 (NOD-2). Currently, there is limited treatment for those with RSV and no vaccine has been developed to prevent RSV infection. Understanding how pattern recognition receptors (PRRs) effect the progression of RSV can lead to better and effective treatment options for those with the virus. The mechanisms of five PRRs: (1) Inflammasome formation (2) TLR4/MyD88 (3) TLR2/MyD88 (4) RIG-1/MAVS and (5) NOD2/MAVS can shed light on future directions in management of RSV.

The Functional Role of Tight Junctions and the Blood-Brain Barrier Multiple Sclerosis

Chelsea Dunaway and Florah Mhlanga, Biology

Multiple sclerosis is a debilitating disease that is caused by autoimmune mediated breakdown of myelin sheaths in the central nervous system (CNS) leading to degradation of nerves. Initial breakdown of myelin is caused by autoimmune reactive cells entering the CNS due to increased permeability of the blood brain barrier (BBB). This precedes myelin degradation, so this breakdown has to occur before immune cells can attack myelin. The BBB seems to be the best target for treatment since it will prevent the disease all together or stop progression at the source if treated late. Unfortunately, permeability of the BBB is not well understood, so it is currently difficult to provide treatment options. Known effectors of BBB permeability are tight junction proteins, adhesion molecules and astrocytic activity. Tight junction proteins are either disorganized or downregulated in multiple sclerosis patients which seems to be the major cause of permeability. Adhesion molecules are upregulated allowing leukocytes access when the barrier is degraded. Activated astrocytic activity produces growth factors that can affect both tight junction proteins and adhesion molecules further regulating permeability. This presentation focuses on integration of known information about BBB degradation and compile possible treatment options that are promising.

Rhabdomyolysis: Molecular Mechanisms and Pathophysiology

Jordan Tharp and Florah Mhlanga, Biology

Rhabdomyolysis is a life-threatening disease characterized by rapid and extensive breakdown of skeletal muscle cells from direct muscular damage or injury. Muscle breakdown leads to insufficient energy production, muscle component leakage and necrosis. Myoglobin is the main element leaked into the blood stream from muscle cell damage resulting in myoglobinuria. Rhabdomyolysis can result from acquired environmental factors such as drug abuse, extreme temperatures, ischemia, and increased or prolonged muscle activity. Rhabdomyolysis can also be the result of genetic abnormalities or gene polymorphisms. Such genetic conditions include muscular dystrophies, McArdle's Disease, and gene mutations that result in metabolic dysfunction and non-functional proteins. Specific pathways such as Renin-angiotensin-

aldosterone system (RAAS), NF- κ B transcription factors, and TGF- β proteins plus other induced characteristics such as NO scavenging, Lipid peroxidation, and apoptosis are responsible for rhabdomyolysis development and progression. These pathways induce vasoconstriction, oxidative stress, inflammation, and fibrosis contributing to ATP depletion, muscle component sequestration, and necrosis. Rhabdomyolysis often goes unnoticed or untested in emergency medicine until more severe complications or death result. This presentation aims to provide in depth information about the pathophysiology and molecular mechanisms involved in rhabdomyolysis as well as a description of various therapeutic approaches that can be employed to mitigate the disease condition.

Hemolytic Disease of the Newborn

Sarah Ladd and Bonny Millimaki, Biology

Alloimmune Hemolytic Disease of the Fetus and Newborn is the result of the maternal production of antibodies against paternally inherited antigens on fetal red blood cells (RBCs). There are more than 50 types of RBC surface antigens, although only a small portion have been studied. The most clinically relevant RBC antigen is the Rhesus antigen, which causes alloimmunization in 30-50% of untreated Rhesus-negative women with Rhesus-positive fetuses. Since the 1970s, prevention and treatment has been available for RhD alloimmunization, which has significantly decreased these numbers. However, there are still problems with the clinical approach to HDFN. First, these preventative and treatment methods are not available in non-developed countries, which still have high rates of fetal death due to HDFN. Second, the mechanism for HDFN has not been clearly defined. The purpose of this review is to condense current literature regarding HDFN and to direct future investigations. This is done by defining HDFN, establishing its relevance, discussing its history, current case studies, and biological basis, followed by the immunological mechanism that progresses the disease and the biological rationale for clinical results that are observed. Finally, the body of knowledge presented is analyzed future research directions are discussed.

Optimizing Quality of Life of During Hospice Care

Erle Mulligan, Angela Gaetano, Gnani Beldhari, and Todd Gary, College of Computing and Technology

Every person will reach the end of life. In the final months, quality of life through care is essential, with an environment filled with family, friends and caring providers. Hospice is end-of-life care that focuses on a person's quality of life rather than length and is used when the individual can no longer be helped by curative treatments or is expected to live less than six months. The goal of this research is to determine the relation between the time of a patient's hospice care admission and the subsequent quality of life for the duration of the hospice stay. A review of existing research was conducted to determine current referral time practices and medical professionals' recommended length-of-stay in hospice. A review was also conducted on previous research concerning end-of-life prediction technology and various quality-of-life measures used by the hospice industry. The 2007 National Home and Hospice Care Survey (NHHCS) Patient Public-Use File dataset is being analyzed to explore how care durations may relate to quality of life. The significance of this research is to share data to help educate and assist patients, families, caregivers and medical professionals with decisions about end-of-life care in order to optimize quality of life during their remaining days.

BOS Framework for Data Science

Shree Mijarguttu and Todd Gary, College of Computing and Technology

The field of data sciences is becoming increasingly relevant. The need for data scientists to quickly, cost-effectively and accurately produce dependable algorithms, constructs and analyses cannot be overemphasized. There is, therefore, a need for enabling definitive improvement of this evolving discipline. This project focuses on this need by laying the foundations for the development of a framework that can be used by data scientists to leapfrog certain essential but repetitive tasks that go into the 'data' process. By definition, any repeatable standardized process is a candidate for automation. The proposed data science framework should enable faster, cheaper and better development of data science models and constructs will catalyze this growth. The requirement outlined by this project suggests the framework should (1) bring discipline and lean principles into this fast evolving and maturing field, (2) enable data scientists to focus on the unique business critical aspects of the particular problem that they are trying to solve while offloading them from the mundane yet technology critical tasks which take up a large portion of the allocated budget and time, (3) reduce the time spent on these elements to a bare minimum, and (4) lower cost through the employment of a robust, scalable, extensible, time tested framework. The proposed framework's concept is a deviation from the current mindset that goes into architecting data science solutions. It separates the repetitive tasks from the unique data analysis tasks and thereby encourages data scientists to focus exclusively on the problem at hand.

How Hiring Foreign Workers in Silicon Valley Help Rural Americans get Hired?

Sinney Chan, Lisu Mullen, and Todd Gary, College of Computing and Technology

The H-1B program began as part of the Immigration Act of 1990, which made major changes to the immigration laws by creating a lottery system to assign temporary visas to foreign workers wanting to work in the United States. Special classes of visas for highly skilled workers were created to help employers in the U.S. reduce their skilled-labor shortfall with foreign workers who had "exceptional ability" and the skills in high-demand. Employers would submit requests for the H-1B visa positions and pay a fee for each one. In 1998, the program was reassessed additional fees for each visa request; these fees would be used as a funding source for grants to train American workers with the skills necessary to fill this labor gap. Since 2011, the U.S Employment and Training Administration has funded several rounds of Technical Skills Training grants totaling over \$340 million, to establish training programs in communities throughout the United States. Our research aims to study whether there is any additional benefit derived from locating the training programs in the same regions where the demand for H-1B workers is highest, with the goal of reducing the number of foreign workers over time. Moreover, if the primary benefit of the training programs is the overall improvement of the American workforce, should the U.S. make modifications to the H-1B visa program?

Using Machine Learning and K-Means Clustering to Predict Inventory

Andrew Abell, Urvish Bhagat, and Todd Gary, College of Computing and Technology

This paper uses machine-learning techniques to research the capability of predicting inventory. For any company, inventory can be both good and bad: strong demand for the products can generate backorders, but so can inefficient or suboptimal planning. The problem translates into lost sales, reducing profit and leading to low customer satisfaction. Even though the importance of the subject is clear, there is little research on the understanding and use of predictive analytics around the supply chain area and Inventory. This research is conducted in a systematic way with a data set consisting of 36-months of prior sales data, involving two hundred thousand different retail products. With knowledge and experience gained, there are the models, methods, techniques and applications of predictive analytics in the supply chain that have determined the trends and research gaps. Machine learning can identify patterns before customers order. The objective will be combined with providing future research directions for further research on this subject.

Detecting Anomalous Lateral Movement with Deep Autoencoder Neural Networks: A Data Science Approach

Ron Holt, Alex Simonian, Alex Aubrey, Stoney DeVille, Will Haight , and Todd Gary, College of Computing and Technology

Crimes in cyber security causes damage over 4 trillion dollars annually worldwide and will be over 6 trillion dollars by 2021. The purpose of this research is to detect lateral movement, a common cyber attackers' technique involving network access from machine to machine, and what phase of the kill chain it operates on by advanced deep learning involving autoencoding methods. Autoencoding neural networks have been used in unsupervised machine learning primarily for anomaly detection. Our novel algorithm will utilize and be tested with simulated data, and later authentication event datasets collected by various open sources. The sourced data sets were collected from an internal network that contained lateral movement, and a data set collected from Los Alamos Labs which contained malicious traffic obtained through an adversarial simulation exercise. Our methods will include statistical modeling to enhance our findings. Our novel approaches will be used to find anomalous events in network data to support increased demands in cyber defense.

A Review of Virtual Reality Simulation for the Training of Robotics Control Policies

Brandon Harden and Todd Gary, College of Computing and Technology

Once thought of as only a source of entertainment, virtual reality has become a multidisciplinary tool used by scientists and experimentalists. Simulation has been shown to be an invaluable tool for the social sciences. Simulations are helpful for scientists because they allow for natural realistic behaviors to take place while brain activity is monitored. The ability to model different scenarios and vary input stimuli are additional benefits of virtual simulations. While a goal of simulation might be to break down complex subjects into simple rules, such as the Game of Life simulation, simulations can also be used to represent a complex occurrence (human presence) in a complex medium such as the android. Artificial Intelligence (AI) is a simulation of human intelligence, with androids being used as a "medium" to manifest the different types of behaviors expressed by humans. Like the android, Virtual Reality (VR) is a "medium" used to represent an experience, perceived by the viewer in virtual space. Therefore, my goal is to utilize VR to simulate human actions and behaviors in order to train AI models. These models would in turn be used in Androids to improve their human-like behaviors in order to study human presence.

Impact of Host Family Engagement on International Students Success

Elizabeth Williams and Reva Chatman-Buckley, College of Education

The purpose of this research project is to examine the impact that could be made on international student attendance, participation, achievement, and retention if schools and host families worked in cooperation. International students face unique challenges, and without their host families to advocate for them, their academic, emotional, and even physical needs are not always adequately met. At the school where this research is in progress, there are currently 19 international students who have left their home countries, families, and friends to come live in Nashville and study at the school. The researcher is using a mixed-methods approach and quasi-experimental design to determine the impact of increased host family engagement and strong communication between the school and host family on student success. The sampling for this study is comprised of a control group of 4 juniors from China and an experimental group of 4 juniors from China, Bangladesh, and Vietnam. Data on these students are being collected through Likert-scale surveys and the school's online grading portal. Host parents of the experimental group are being interviewed. The host families of the experimental group will be receiving frequent communications and invitations to campus during the six weeks of the study. The researcher's hypothesis is that increased communication and interaction between the school and host families will allow international student needs to be more quickly recognized and challenges to be more effectively addressed. Research is still in progress at this time. Results of this research project should be of interest to educational institutions which work with international students.

The Effects of Marijuana Use on Academic Outcomes on Tennessee College and University Campuses

Verontae Deams and Trace Herbert, College of Education

Research suggests that marijuana use has an effect on a variety of cognitive abilities (memory, attention, comprehension, impulse control, and decision making). One factor presented in the research has shown that marijuana use has an effect on student GPA. Investigating the relationship between marijuana use and academic outcomes is primary because research suggests that marijuana use impacts degree completion which, in turn, impacts an individual's future employment and earning potential. The related literature review provided an overview on substance use and abuse, the history of marijuana, marijuana usage, academic outcomes, and prevention and intervention programs. Specifically, it focused on the following variables: athletes, classification, ethnicity, gender, and Greek affiliation. The study also provides a framework for understanding the background of reliable information for the study, trends, future research, and guidance for the methodology. A mixed methods research design will be employed with a quantitative dominance. The population and sample will include CHASCo member institutions and college administrators. The data collection procedure will include a MOU between CHASCo and Lipscomb University in addition to approval from the JRC and IRB. Data analysis will include the JMP software for analyzing the quantitative data and Microsoft Excel to analyze the qualitative data. This information was essential in providing research based answers to the research questions.

Impact of Sheltered Instruction on Vocabulary Acquisition in ELL Students

Lauren Coleman and Jeanne Fain, College of Education

This research experiment seeks to determine whether using the Sheltered Instruction Observation Protocol (SIOP) Model with small groups of English Language Learner students will raise students' vocabulary knowledge scores. The achievement gap between English Language Learner students and English-Only students persists and widens, even as the percentage of English Language Learners in U.S. classrooms continues to grow. This paper reviews the existing literature on the academic needs of and best practices for English Language Learners, along with the research on vocabulary acquisition and the language learning process. The researcher also reviews previous studies on the efficacy of the SIOP model. The SIOP model is an eight-fold approach to lesson planning and instruction that addresses the needs of ELL students through techniques concerning lesson planning, connecting to prior knowledge, collaborative learning strategies, and more. While there exist studies on SIOP's benefit for secondary and postsecondary students, the author attempts to add to this body of research by studying the effects of SIOP instruction on early elementary students who are learning to read for the first time, perhaps in multiple languages. The researcher also hones in on SIOP's impact on vocabulary knowledge in particular in the reading process. The paper uses a Vocabulary Knowledge Scale (VKS) to measure students' vocabulary acquisition throughout two units of study in a second grade classroom. The researcher also examines students' attitudes towards reading and vocabulary knowledge and the impact of SIOP instruction on these feelings.

The Impacts of Conferencing with Student Readers

Brandy James and Jeanne Fain, College of Education

This study will cover the impacts that one-on-one conferences have with student readers. The study will show correlations of these conferences and the possible benefits that they may have to their text level assessments throughout the year. Conferences allow an opportunity for students to receive individualized guidance to specific skills that they are needing to better their reading capabilities. They also allow students to aspire to goals that are created by both the teacher and student. Having these goals and conferences may create a bigger impact for the students and their reading levels in a positive way.

Maximal Strength Correlation, Muscle Activation, and Bar Velocity Comparisons between Back Squats and Safety Squat Bar Squats

William Vantrease and Jeremy Townsend, Kinesiology

Purpose: To compare muscle activation and bar velocity between the traditional (TRAD) and safety squat bar (SSB) back squat and develop a prediction equation for training loads with the SSB. Methods: Thirty-two males (21.94 ± 3.1 yr, 1.78 ± 0.8 m, 81.7 ± 10.1 kg) volunteered to complete this randomized, crossover-design study. Participants completed two separate 1-repetition maximum (1RM) sessions using either the TRAD or SSB. Subsequently, participants completed one session of 3 repetitions at 65% and 85% of their 1RM for each squat condition (SSB & TRAD). Peak muscle activation of seven muscles from the lower body and trunk were recorded through surface electromyography (EMG) and mean velocity (MV) was recorded by a linear transducer. EMG and MV were analyzed by a 2x2 (bar x load) repeated measures analysis of variance (RMANOVA). A Pearson correlation was used to determine the relationship of load between bars and linear regression provided prediction equations. Results: Squat 1RM was significantly higher ($p < 0.001$) for TRAD (144.7kg) compared to SSB (128.8kg). A significant main effect was seen in EMG ($p < 0.01$) and MV for load ($p < 0.001$). No significant bar x load interaction was observed between conditions for EMG or MV ($p > 0.05$). A strong correlation ($r = 0.94$) was observed between 1RM values of each bar. A prediction equation for SSB 1RM was calculated through regression analysis ($\text{SSB 1RM} = 11.613407 + 0.8536183 * \text{TRAD 1RM}$). Conclusion: The SSB produces similar muscle activation and bar velocities compared to the TRAD at relative intensities. However, absolute loads should be adjusted when changing squat bars during a training cycle.

The Fight Against Childhood Traumas Creating ACES Informed Curriculum in Faith Based Organizations

Morgan Turner and Michelle Steele, College of Leadership and Public Service

Christian Community Services, Inc. is an organization that focuses on financial literacy and assisting those living below the poverty line to move away from public housing and into their own homes. At present moment, CCSI offers a clear intervention to economic hardship, which is considered an adverse childhood experience, however it does not address specifically any other types of traumas that might be experienced by the participants. The purpose of this study is to explore the Personal, Academic, Spiritual and Social (P.A.S.S) program within Christian Community Services, Inc. and make recommendations to the program leaders to assist in making the program ACES informed. To accomplish this directive interviews current program leaders, will be conducted and analyzed, along with an in depth exploration of the recent research literature in order to uncover best practices and how best to incorporate them to insure that the program is addressing the social and emotional needs of the students as well as any requisite academic needs.

Examination of the Effect of Copper(II) alpha-(N)-Heterocyclic Thiosemicarbazone Complexes on DNA Topoisomerase II

J. Myles Keck and Joe Deweese, Pharmaceutical Sciences

During replication, transcription, and cell division, knots and tangles can form in DNA. To relieve this stress, type II topoisomerases (Top2) are employed, which use a transient enzyme-linked double strand break to remove the knots and tangles formed within the DNA. Furthermore, because the cell has an immediate need for Top2 activity in order to properly perform cellular functions, Top2 has become a target of interest for anticancer therapy. Interestingly, a class of compounds termed α -(N)-heterocyclic thiosemicarbazones have been identified as a possible anticancer therapy option due to their ability to impact Top2 activity. Moreover, literature evidence suggests that copper complexes [Cu(II)] of α -(N)-heterocyclic thiosemicarbazones act as catalytic inhibitors of Top2 similar to the Top2 inhibitor Dexrazoxane. Previously, our lab demonstrated activity against human Top2A, but there is a second isoform in humans, Top2B. Taking this into account, we set out to determine the role of four Cu(II) complexes of α -(N)-heterocyclic thiosemicarbazones on Top2B inhibition. The Cu(II) ligands, copper(II) acetylpyridine-ethylthiosemicarbazone [Cu (APY-ETSC)Cl], copper(II) 2-acetyl-thiazole-ethylthiosemicarbazone [Cu (ATZ-ETSC)Cl], copper(II) benzoylpyridine-ethylthiosemicarbazone [Cu (BZP-ETSC)Cl], and copper(II) 2-acetyl-4-methylthiazole-ethylthiosemicarbazone [Cu(AMT-ETSC)Cl] were examined for their ability to alter the catalytic activity of Top2B. All four Cu(II) complexes were effective at inhibiting DNA relaxation. Additionally, all four Cu(II) complexes increased double-stranded DNA cleavage. Specifically, ATZ demonstrated a higher percent double-stranded cleavage compared to its three counterparts at lower concentrations. Taken together, our results provide evidence that the four Cu(II) complexes of α -(N)-heterocyclic thiosemicarbazones utilized impact Top2B function and further analysis will clarify the mechanism.

HU-331 and Oxidized Cannabidiol Act as Inhibitors of Human Topoisomerase II α and β

Tom Wilson and Joe Dewese, Pharmaceutical Sciences

Topoisomerase II is a critical enzyme in replication, transcription, and the regulation of chromatin topology. Several anticancer agents target topoisomerases in order to disrupt cell growth. Cannabidiol is a major non-euphoriant, pharmacologically active component of cannabis. Previously, we examined the cannabidiol derivative HU-331 in order to characterize the mechanism of the compound against topoisomerase II α . In this current work, we explore whether cannabidiol (CBD) impacts topoisomerase II activity, and we additionally examine the activity of these compounds against topoisomerase II α . CBD does not appear to strongly inhibit DNA relaxation and is not a poison of topoisomerase II DNA cleavage. However, oxidation of CBD allows this compound to inhibit DNA relaxation by topoisomerase II α and β without poisoning DNA cleavage. Additionally, we found that oxidized CBD, similar to HU-331, inhibits ATP hydrolysis and can result in inactivation of topoisomerase II α and β . We also determined that oxidized CBD and HU-331 are both able to stabilize the N-terminal clamp of topoisomerase II. Taken together, we conclude that while CBD does not have significant activity against topoisomerase II, both oxidized CBD and HU-331 are active against both isoforms of topoisomerase II. We hypothesize that oxidized CBD and HU-331 act against the enzyme through interaction with the N-terminal ATPase domain. According to the model we propose, topoisomerase II inactivation may result from a decrease in the ability of the enzyme to bind to DNA when the compound is bound to the N-terminus.

Resilience, Crises, and Trauma

Brianna Bloom and Denis Thomas, Psychology, Counseling, and Family Science

The following research is a study to investigate the hypothesis of whether there are correlations between resilience and trauma. Having a literature review which discusses the definitions of resilience and crises, ways of increasing resilience, and how crisis affects one's resilience all pools to the indication of the connection between crisis exposure and resilience levels. It then goes on to discuss whether correlations exist between resilience levels and exposure to trauma. It was hoped that the more trauma exposure one has, the higher resilience score they will have. Twelve participants were pooled from a local Southeastern university and varied between the ages of 18 and 30. After a brief informative script, the researcher handed out packets to each of the participants, which included an Informed Consent Form, a demographic questionnaire, the Connor-Davidson Resilience Scale, and the Basic Trauma Questionnaire. Participants had a week to fill out and return the packets, they were collected and filed away anonymously in a double-locked room. Once the data was collected, it was found that the relationships between the variables were weak and statistically insignificant. Though no significance was found, further research is called for. Gaining more participants could improve the results of the study, as well as expanding upon the demographics and using them as a set of guidelines for future research. What is hoped for the research following this pilot test is to find although people are subjected to trauma throughout their lives, their ability to cope and adapt to it exceeds expectation.

The Effect of Podcasts on the Public Education of Local Communities on the Importance of Food Sovereignty

Addie Hayes and Emily Stutzman, Institute of Sustainable Practice

The purpose of this work is an attempt to bridge the gap between those educated in the food | sovereignty movement and the general public. According to the Declaration of Nyéléni of the first global forum on food sovereignty in Mali in 2007, food sovereignty is defined as follows: “the right of peoples to healthy and culturally appropriate food produced through ecologically sound and sustainable methods, and their right to define their own food and agriculture systems. It puts the aspirations and needs of those who produce, distribute and consume food at the heart of food systems and policies rather than the demands of markets and corporations.” However, the full concept of food sovereignty is difficult to pinpoint in one given area and therefore difficult to achieve. Using interviews with actors within the food system, academic journals in the sustainability field, and up-to-date news sources, I will merge all of this information and present it to the public in the form of a podcast. Specifically, this information will be localized for the community of the Northwest region of Arkansas. The podcast will make information available to those interested who would like to help pinpoint a vision for a healthier, more resilient, and more locally beneficial food system. Because of the interdisciplinary nature of food sovereignty, it is noted that the public will be informed of not only the environmental impact of their food choices, but also the social, economic, and political impacts.

Toward a Redemptive Missional Theology of Disability

Grant Azbell and Lauren White, Theology

How does one think about disability theologically? Further, how does one read the Bible in light of disability existing in the world? There are certain texts that are very problematic when read in light of disability and the current discussion surrounding disability and ableism. However, when certain texts are read in the context of their theological trajectory with the mission of God and values of the kingdom of God in mind, the readings become less problematic. Through a missional theological approach, people who experience disability are transformed from people experiencing exclusion in the church and society to people that represent the center of the gospel. A full treatment of disability is impossible due to the limited scope of this paper and the volume of quality theological work done on this topic. However, a redemptive missional framework toward a better theology of disability will be presented. This will be attempted by the following efforts: by understanding that the biological and neurological diversity associated with disability is, on some levels, part of God’s created goodness; by a redemptive theological reading of three texts that have been damaging to the community of people experiencing disability; by reading disability into Paul’s reversal of strength and weakness in 1 Cor. 1:18-31; and finally by a redemptive eschatology of disability.

Undergraduate Students Oral Presentations

The Image of God: Both Male and Female?

Lauren Anderson and Lauren White, Bible

This paper seeks to examine the significance of the image of God as both male and female. In Genesis 1:26-28, God creates humanity in the divine image. In verse 27 of this pericope, we find that the fullness of the image of God is encompassed within the male and female genders together. While the preponderance of Christian scholarship has referred to God in masculine terms, this text proves that God cannot be reduced into a single gender male. This has had and continues to have serious repercussions in the church, as males are predominantly seen as the bearers of God's image. When God is solely identified as male in gender, half of the image of God is missing from the view of the church; half of the characteristics of God's image are forgotten. Even worse, half of those who work as God's imagers are neglected and their imaging capacity is diminished. There is still a dire need within the church for a thorough examination of the image of God and for the recognition of the image of God as both male and female. As more modern scholarship has begun to recognize, God throughout scripture holds both masculine and feminine characteristics. God has given the imaging capacity and vocation to both females and males. The paper concludes that when the church is able to accept this truth about the image of God, the church can begin the reconciling work of bringing women and men together in the service of the Kingdom.

Jesus' Encounter with the Rich Ruler in Luke 18:18-30

Noah Merritt and Mike Williams, Bible

In Luke 18:18 - 30, the story of Jesus' encounter with a rich ruler is recorded. Their conversation is an exploration of a multitude of interrelated ideas. The man asks Jesus about how he might inherit eternal life and Jesus responds by presenting radical truths about the dangers of wealth and the nature of the kingdom of God. He calls the man to earnest discipleship: the kind that can only be pursued by someone who has disinvested themselves from all worldly aspirations and placed their hope for purpose and salvation in Christ alone. Utilizing the exegetical methods of redaction and historical criticism, this paper is an investigation of this passage in order to better understand God's message, via Luke, to a modern audience. This study includes an examination of the context of the story within the Gospels and, specifically, within the book of Luke. It also develops an exegesis of the stories that form the immediate context of the story of Jesus' encounter with the rich ruler. Besides the commentary on the nature of salvation and the kingdom of God, the themes explored include: Jesus' relation to the Mosaic Law, the trappings of worldly possessions, the power of community, and Jesus' ministry to and advocacy for the marginalized. These ideas are fundamental aspects of the Church's health and ministry in a world full of egocentric ideology and, thereby, definitely worthy of its attention and consideration.

Culture in Conflict: An Exegesis of 1 Corinthians 11:17-34

Lisa Moser and Mike Williams, Bible

The culture in which we find ourselves influences our understanding of the Gospel and the way we function as a church more than we realize. To some extent, this influence is inevitable. But what happens when our society's culture influences us to the point that it poisons the counter-culture that Christ created? Just as we may find ourselves in this situation today, so did the church in Corinth during the first century. In 1 Corinthians 11:17-34, Paul rebukes the church for becoming mastered by self-interest and allowing socioeconomic divisions to morph their participation in the Lord's Supper. He implores them not to be subject to the norms of competitiveness and elitism prevalent in the world around them, but expects them to create a new culture characterized by the love and self-sacrifice that Christ exemplified through his life and death. A study of 1 Corinthians 11:17-34 in light of the Corinthian context illuminates the practice of the Lord's Supper and demands a response of counter-cultural unity within the body of Christ.

The Relationship Between Love and Hate

Hunter Maerz and John Mark Hicks, Bible

Love and hate are continuous themes throughout the Bible, and life today, that often seem pitted against each other. In today's American society, people generally prefer others to be more loving than hateful, but is hate always a bad thing? Is there a place for both love and hate in our lives? To determine how the relationship between love and hate functions, I tracked the usage of both words throughout the Old and New Testaments in conjunction with reading books, journal articles, and commentaries on the topic. I entered my research with three hypotheses. The first hypothesis is that love and hate are opposites. The second hypothesis is that love always creates while hate always destroys. The third hypothesis is that neither love nor hate is innately good or evil. This paper discusses how God can love and hate at the same time, and how we in turn should understand and live out both love and hate.

Utilizing Methylation and Expression Signatures to Construct Predictive Models and Personalized Cancer Treatments

Caleb Reagor and Rebecca Conway, Biology

Data from high-throughput arrays available through The Cancer Genome Atlas (TCGA) have been helpful in elucidating the role of methylome and transcriptome level variations in the oncogenesis and progression of various cancers. Methylome remodeling has been observed across most cancers, and several studies have revealed a novel role for methylation in regulating alternative splicing. Alternative splicing contributes to the malignancy and aggressiveness of cancers, and intragenic methylation of alternatively spliced exons can serve as an effective biomarker for prognosis and personalized treatment. In this study, methylation values, exon expression values and patient survival data were downloaded from TCGA. Values were sorted into methylated and unmethylated groups at each methylation probe. Probes were selected if their methylation status significantly affected both exon expression and patient mortality. Groups of patients with similar outcomes were found based on the total number of positive biomarkers in a sample. Prognostic models were constructed using multivariate regressions for various TCGA cohorts. Each group of patients was also analyzed based on treatment including surgery, radiation and chemotherapy. In each type of cancer, an unweighted index was created from the top biomarkers. The full results of the study will be made available online through an interactive web tool for physicians and researchers. This study has identified biomarkers of genes involved in alternative splicing in various cancers. These biomarkers are powerful predictors of prognosis and therapeutic response in the tested cohorts and may ultimately be useful for predicting personalized patient prognosis and guiding effective therapy.

Evaluating Interactions Between *Helicobacter pylori* VacA Toxin and Anti-VacA Nanobodies

Deion T Sims and Florah Mhlanga, Biology

Helicobacter pylori secretes a pore-forming toxin called VacA. VacA enhances the ability of *H. pylori* to colonize the gastric mucosa and contributes to the pathogenesis of gastric adenocarcinoma and peptic ulcer disease. The secreted VacA toxin is an 88 kDa protein that is comprised of two domains, P33 and P55. The p55 domain is primarily a α -helical structure, and plays an essential role in facilitating VacA binding to gastric epithelial cells. The amino terminal portion of the P33 domain is required for formation of membrane channels and cytotoxic activity. A high resolution structure of the P33 domain has not yet been determined. Membrane channel formation and cytotoxic effects of VacA are dependent on oligomerization of the protein. To facilitate studies of VacA structure and function, a panel of VacA-reactive single-domain antibodies (nanobodies) was generated. In this study, we analyzed the reactivity of these nanobodies with multiple forms of VacA by ELISA and tested nanobodies for toxin-neutralizing activity in a cell culture assay. Three of the nanobodies exhibited strong ELISA reactivity with VacA and also neutralized VacA activity. Further experiments will map the sites in VacA that are recognized by these nanobodies. These experiments will provide further insight into the structure and function of VacA.

Localization of MHC1 in Antigen Presenting Cells

Brandon Cunningham and Amanda Williams, Biology

MHC1 is an antigen presenting protein found on the cell surface of all nucleated cells in the human body. It presents cytosolic non-self peptide fragments to cytotoxic T cells in order to trigger an immune response. This mechanism is an essential part of cell-mediated immunity and allows every cellular component of the body to play a role in immunity. In antigen presenting cells (APCs), the immunoproteasome degrades proteins into fragments for presentation by MHC1. Determining location of MHC1 as the result of immune signaling corresponds with functionality of the immunoproteasome and how the presentation of peptide antigen may be occurring. Localization experimentation occurred through culturing of the murine macrophage cell line JAWSII. Treatments involved use of IFN-gamma to mirror immune signaling with AG490 in conjunction with IFN-G as a negative control. Fractionation of the cells occurred into cytosolic and membranous portions. Western blotting was performed for protein analysis and quantification of the blots followed. Future directions include further experimentation with immune cells and cytokines.

Consumer Perceptions of Ride Sharing Services: A Crisis Management Perspective

Amy Hurd and Lindsay Dillingham, Business

This study explored consumer perceptions about the safety of ride sharing services (e.g., Uber and Lyft). A moderated focus group and survey were conducted to explore multiple research questions. Thematic analysis of qualitative data indicates that, while multiple consumers have experienced uncomfortable situations, price remains the primary factor in the decision to use ride sharing services. Mean comparisons of survey data reveal that, when compared to a safety concern experienced through the lens of social media or news outlets, both consumer perceptions of safety and overall favorable opinion of ride sharing services is most impacted by a first-hand account of a safety violation. Yet, consumers are more willing to release negative ride sharing experiences via social media if the incident is something witnessed on the news rather than a first-hand account. Implications for companies and ride sharing consumers are discussed along with suggestions for future research.

Active vs Passive Portfolio Management

Natalie DuBoise and Jeff Jewell, Business

Opinions in the active-passive management debate have attracted much attention in the investment world. Active fund managers believe there are inefficiencies in the market place, which leads to arbitrage and the potential to generate excess returns over the benchmark. On the other hand, passive fund managers track an index because they believe it is impossible to beat the market. Theoretically, active managers should provide higher returns than their counter passive managers, which allows these managers to charge higher fees for their services. Asset management companies have different investment philosophies in this space, which has let consumers determine the best fund managers for them. Many money managers and finance professionals have declared their investment philosophy superior in both the equity and fixed income space. However, returns and performance have shown that equity and fixed income investing should be treated differently in terms of how they are managed. In my research, after explaining some basic investing principles and analyzing the returns of major ETFs, mutual funds, and bond funds, I will show why active management is superior in the fixed income space while passive management is better suited for the equity market.

Pitch at Me: The Story of a Startup

Hannah Kraebel and Andy Borchers, Business

Everyone will have a brilliant idea in their lifetimes; 550,000 of those people will turn that idea into a business every month, and 90% of those businesses will fail. What separates those who make it from those who don't? Pitch at Me: The Story of a Startup seeks to answer that question through an analysis of the entrepreneurial mindset that makes the 10% difference. It follows one student's consumer product startup through the College of Business's three key pre-launch courses, the collegiate pitching circuit, and a pre-market launch. The entrepreneurial mindset is one that hinges on innovation, the creation of value, and a belief that the market rules. It takes scaled problem solving and execution to turn an entrepreneurial idea into a launch-able concept, and that's the purpose of the three pre-launch courses. Entrepreneurial Marketing, Finance, and Capstone Seminar are the courses tasked with guiding students through the most vital aspects of a successful startup. Through them the business will determine its market entry strategy; this strategy includes funding, marketing, sourcing, and path to market entry. Pitching, the act of selling someone on a business venture, is a key activity to pre-launch. Collegiate pitch competitions are the unsung heroes of bootstrap funding. The startup exemplified in this presentation raised over \$6,000 toward its pre-launch through pitching alone. This process of bringing an idea through all stages is a journey and an art.

Surface Free Energy Characterization of an Adhesin Protein

Spencer Oskin, Verena Ghebranious, Jasmine Carlisle, and Brian Cavitt, Chemistry and Biochemistry

Collagen is the most abundant protein found in animals and is also utilized by many bacteria as an adhesin to adhere to different substrates. Previous studies have characterized components of collagen's surface free energy γ_s^{LW} , γ_s^{AB} , and γ_s using the Owens-Wendt equation, but the separate acid-base components (γ_s^+ and γ_s^-) remained uncharacterized. The surface free energy of the isolated hydrophilic portion of collagen used by bacteria to adhere to substrates has also not been determined. The present study was designed to determine the full surface free energy profile (γ_s , γ_s^{LW} , γ_s^{AB} , γ_s^+ and γ_s^-) of collagen's hydrophilic portion to find a suitable surface coating capable of preventing bacterial adhesion and colonization. Glass slides were surface functionalized to produce a nonpolar surface onto which soluble and insoluble collagen was solvent cast onto the slides. The sessile drop method for determining contact angles was used with three fully characterized solvents (e.g., *n*-bromonaphthalene, formamide and deionized water) whereupon the surface free energy components of the collagen-coated slides were determined via the Owens-Wendt and van Oss-Chaudhury-Good equations. The results, calculated via the linear algebraic matrix method, showed comparable surface free energy values to previous studies for the insoluble collagen. The soluble collagen

also had comparable values meaning that the hydrophilic portions of the collagen had not oriented correctly. Though the surface free energy for the hydrophilic portion of collagen remains uncharacterized, the acid (γ_s^+) and the base (γ_s^-) components of collagen's surface free energy were determined using the van Oss-Chaudhury-Good equation.

Study of Ice Adhesion on Experimental Coatings

Rachel Brooks and Brian Cavitt, Chemistry and Biochemistry

This project focused on synthesizing and characterizing experimental silicon-containing materials before examining ice adhesion on the coated aluminum substrate. The study was conducted at the Advanced Materials and Processing Branch at NASA Langley Research Center. The first part of the project consisted of synthesizing the materials and chemically characterizing them through infrared (IR) spectroscopy and nuclear magnetic resonance (NMR) spectrometry. I synthesized three materials, two of which were viable for coating and testing. After spray-coating them onto aluminum air foils ("blades") and flat aluminum plates, I physically characterized the surfaces using contact angle goniometry and surface profilometry. While also working on chemical synthesis, I helped run baseline tests on the machine used to study ice accumulation and adhesion on aluminum air foils. These tests helped my mentor know what modifications to make to the samples, machine, and measurements to obtain consistent, standardized data. I developed a method for measuring the ice shed area on the blade using pictures. After synthesis and coating the air foil blades, I tested the experimental coatings in the machine to gather data on how the materials accumulated ice and how the ice adhered to the surface. Using this data, I compared the uncoated control blade ice adhesion shear strength (IASS) values to the experimental values obtained from testing the coated blades. I was then able to calculate the adhesion reduction factor (ARF) for the coatings and compare the data to previous tests with varying carbon chain lengths.

Macryption 1.0

Robert Hufham, James Pugh, John Slaven, and Timothy Wallace, Computing and Technology

Protecting sensitive data should be of concern to anyone using technology. Macryption 1.0 will explore the possibilities of encrypting data with the use of a GUI. Macryption 1.0 will be one of few GUI enabled file by file encryption programs that is Unix platform based and utilizes a one-time password. Macryption 1.0 creates a user-friendly environment that any individual can start up and use to encrypt their files without having to know command line syntax. Data will be fully secured as Macryption 1.0 will utilize a file by file approach to encryption with implementation of a one-time password.

Evaluation of the Practicality of Fraud Prevention for Pharmaceutical Prescriptions using Blockchain Technology

Andrew Kerley, Bryce Skelton, Sinney Chan, Daniel Johnson, and Timothy Wallace, Computing and Technology

This research project seeks to evaluate the suitability of the application of open source blockchain technology for purposes of fraud prevention for pharmaceutical prescriptions by testing a blockchain prototype in a controlled environment. Blockchain technology is cutting edge technology that cryptographically links blocks of data in a chain. The technology can be used to diminish prescription drug abuse and fraud, provided by the data integrity service offered by blockchain technology. Due to the sensitive nature of prescriptions, confidentiality will also have to be evaluated and confirmed. When implemented properly, a decentralized system for pharmaceutical prescriptions would allow pharmacists to validate or invalidate a prescription using cryptographic techniques. The objective of the research presented in this report aims to answer the practicality of the fraud prevention mechanisms provided by blockchain technology.

Blockchain Technology in Online Voting

Gregory Araujo, Abdulhafiz Alawi, Ben Alden, and Timothy Wallace, Computing and Technology

Project aims to bring to light an implementation of blockchain technology in the voting process. While introduced as the means to record cryptocurrency transactions such as bitcoin safely and securely, its capabilities and potential can expand beyond this. With the allotted time, the optimal result would be to create a ledger that functions on blockchain technology and is able to hold voter data. Through this, users will be able to input votes and see how blockchain secures it in a unique and safe way. The aim is to take the current process of voting and place it into a format that is simpler, more secure, and more cost effective. The novelty of this project is that it creates a safe, transparent voting process while also maintaining voter privacy. If properly implemented, the public's trust in online polls will be improved, and the normal voter will know that their vote counted and that the ledger is truly accurate. Skills needed for this project will primarily be javascript and experience with standard web development tools. Most complex part will be incorporating the data structure into a web format. Risk should be low as it is done locally. This project does not possess any system requirements that are beyond anything used in previous projects.

Lipscomb Emergency Network System

Justin Draughon, Mac Hall, Damian Grant, and Timothy Wallace, Computing and Technology

Mobile devices will connect together over Wi-Fi to form a mesh network with our application. Our Lipscomb Communication Application will allow University officials and students to communicate with each other and send an emergency GPS coordinates beacon out in the event of a disaster that knocks out traditional communication means.

Investigation Regarding Feasibility Concerning Acceleration of Predictive Regression

Sinney Chan, Will Richmond, and Timothy Wallace, Computing and Technology

Predictive models are used throughout data science, and have proven to be an invaluable tool for many applications of big data. However, those who require predictive models with big data are commonly challenged with the task of analyzing huge data sets possibly spanning thousands of gigabytes. High dimensional data analysis can take a very long time, and can consume many resources. An aspect of this research is to use only a sampled portion of the data set to generate results with an acceptable error margin to achieve similar results to predictions made using the full data set. The research will investigate regression modeling based upon sampled data matrices and a ranked selection model selection of predictors based upon subspace norm distance to determine if it lies within the subspace. The use of Monte Carlo and various probability distribution functions may be evaluated. Preliminary code and data will be presented.

The Digital Divide in Cyber Security: A New Threat to National Security

Zachariah Westover and Chris Simmons, Computing and Technology

The digital divide had been defined as the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard to both their opportunities to access information and communication technologies and to their use of the Internet for a wide variety of activities. This gap is present not only between different countries in general, but disparate groups within a country. The digital divide focuses not only on the accessibility of different peoples to technologies, but also the training required to effectively use and apply technology in everyday life. In addition, a community wide paradigm shift must be made in order for these new technologies to be incorporated into society in a practical way. In this work, we intend to study experiential learning strategies to bridge the digital divide on a national level, in order to enhance cyber security. We combine our results with various cyber security frameworks to propose a cyber-security based learning curriculum to yield the best possible solution for educational institutions and organizations on a general level. The goal of this framework is to increase the self-efficacy

of a connected user to decrease potential issues pertaining to cyber security related events, caused by a digital divide. Our cyber security curriculum can be applied to different organizations and countries with similar problems, yet with slight variations due to the exact needs of the individual entity. Moreover, modifications can be applied to an array of countries with different economic levels.

Do Post-Lecture Quizzes Act as a Motivating Factor for Student Success?

Joshua Howell, Joseph Tipton and Richard Gregory, Mechanical Engineering

Have you ever had an experience in a classroom where some of your students were not paying attention? Thinking about the due date of homework from another class? Talking during class? Constantly on their phones? The purpose of this paper is to report the results of an investigation on the impact of post-lecture quizzes on students' level of attentiveness in classrooms and how post lecture quiz scores associate with their success through the course. Daily classroom quizzes of 2-5 multiple-choice questions from six different introductory science classes, students' self-reported data on how classroom quizzes motivated them to be more attentive, and students' exam scores in the courses have been utilized for the investigation. Our results suggest that when scores on post-lecture quizzes are included in the final grade, quiz scores are more positively associated with their final exam score than when quizzes are considered only as extra credit for the final grade. Post lecture quizzes helped students to increase exam scores and motivated them to be more attentive in the classroom if those quizzes counted in the final grade and quiz questions were more relevant to the exams.

I Have Had My Vision: Transcendence and Androgyny in *To the Lighthouse*

Morgan Beers and Jan Harris, English and Modern Languages

Virginia Woolf's modernist ideas, including moments of being and the exploration of internal consciousness, permeate her essays, short stories, and novels. Having experienced her own personal "moments of being," as discussed in "A Sketch of One's Past," Woolf utilizes writing to make sense of the glimpse of what she calls "reality" provided to her. These attempts at clarity are apparent in her fiction as her character's experience moments of transcendence or revelation. In *To the Lighthouse*, Lily Briscoe's experiences culminate in a moment of transcendence, allowing her to unite seemingly conflicting forces within her painting and reach the state of the androgynous artist. For Woolf, the androgynous mind represents the perfect being and unified existence an artist can reach during their lifetime and, through Lily Briscoe, Woolf demonstrates the creative and transcendent potential of the androgynous mind.

"When I am Among the Trees: Examining Septimus Smith's Vocalizations of PTSD in Woolf's *Mrs. Dalloway*

Meg Provenzale and Jan Harris, English and Modern Languages

Early psychological treatment and research on Post Traumatic Stress Disorder (PTSD) during World War I reveals the lack of understanding when compared with treatment and research today. In Virginia Woolf's *Mrs. Dalloway*, Septimus Warren Smith, a young soldier recently returned from the war struggles with what contemporary medicine would diagnose as PTSD. Septimus cannot communicate his thoughts and emotions. Also, those around him, like his wife Reza and his doctor, struggle to understand his mental illness. Throughout *Mrs. Dalloway*, Septimus attempts to describe his emotional and psychological distress through natural imagery. Through Septimus's inner monologues, Woolf's emphasizes the healing qualities nature provides, and foreshadows the emerging fields of Ecotherapy and Ecocriticism.

Sad! The Language of Social Media and Fake News in the 2016 Election

Rebekah Stogner and Jan Harris, English and Modern Languages

While the use of social media in politics has shown rapid growth over the past few elections, the tweets of president elect Donald Trump and candidate Hilary Clinton in the 2016 campaign no doubt made the biggest example for the power of such direct contact with the voters. Twitter and the news briefs it often promotes are limited to 140 characters or less, forcing them to create a language of their own to convey their message as quickly and effectively as possible. Because of the brief wording and the short amount of time that social media users glance at content, media campaigning allows false news to rise to power, from conveniently misplacing disclaimers on fake or parody articles to pointing voters to an anti-candidate approach on both sides. In 2016, the vast majority of “fake” news projected anti-Clinton values, giving Trump a platform to win the election through rhetorical strategies and language evolution, using language as a weapon of sorts within his social media platform. The 2016 presidential election favored Donald Trump because of the brief, manipulative language of social media, false news, and the candidate himself.

Unexpected Sainthood: Sarah Miles as the Sacramental Word in *The End of the Affair*

Peggy Miller and Jan Harris, English and Modern Languages

In Graham Greene’s novel *The End of the Affair*, Maurice Bendrix searches for a reason for the end of his affair with Sarah Miles. In the first two sections of the book, Bendrix narrates the story of their affair from his perspective; however, the third section of the novel, Sarah’s diary, is written from her perspective. Sarah’s diary reveals that Bendrix’s view of their affair is too simplistic. Sarah Miles proves to be a complex character whose love for God causes her to sacrifice a relationship with Bendrix. When Sarah dies, she has achieved an unorthodox sainthood through her love for God. Sarah’s spirituality weaves the material and the divine together in the novel, and her character causes Bendrix and the other characters to think differently about that which is outside of time (Hynes 238). Sarah thus embodies the sacramental word through her interactions with people and her unexpected sainthood.

The Power and The Glory: The Emerging Mexican National Identity of the 1930s

Brooke Foster and Jan Harris, English and Modern Languages

Two years after traveling in Mexico to explore what he called the “Catholic Issue,” Graham Greene wrote *The Power and The Glory*. The novel displays the relationship between the Mexican Catholic Church and the Mexican government through the relationship of the whiskey priest and lieutenant. Throughout Mexico’s history, the Church and government have been entangled and oppositional, causing their relationship to be strained. In the decades leading up to Greene’s 1938 visit, Mexico had undergone countless shifts in power and ideology that resulted in the government’s persecution of the Catholic Church. In his 1940 novel, *The Power and The Glory*, Greene exemplifies the benevolence, shortcomings, and pure intentions of both the whiskey priest and the lieutenant, illuminating the commonalities between the two varying ideologies. Greene’s illustration of these commonalities foresees the possibility for conversation between the Church and government.

The Humor and Political Turmoil of Charles Chaplin

Makayla McClanahan and William Steele, English and Modern Languages

This presentation delves into Chaplin's use of humor as a medium to exonerate the suffering plight of Americans in the early 20th century, his showcases of humor as a way to expunge upon others the sufferings of the middle class and the underprivileged. Chaplin's work was complicated by the political upheavals of his time and the juxtaposition between his humorous silent films and the political climate make for a fascinating study in the Post-industrial and Post WW2 America.

The Whole Thing is So Damned Silly: World War II and the Collapse of the British Identity in *Put Out More Flags*

Summer Starkie and Jan Harris, English and Modern Languages

From September 1939 until the following May, England engaged in the Phony War, a year in which the British population failed to grapple with the scale of World War II. Evelyn Waugh sets his novel *Put Out More Flags* in the midst of Phony War insouciance, creating a satire of the war effort and revealing the collapse of the British identity through the antics of his main characters. Through dark comedy, Waugh shrouds the devastation and uncertainty that he associated with the Modern era in humor, creating a fictional gap between the horror of his novels and the horror of reality. By doing so, Waugh simultaneously acknowledges the loss of morality, the forfeit of the individual, and the senselessness of the war, but offers the reader superiority over the collapsing society through the humor of his novels.

Can We Reach Nirvana?

Kimberley Klein and Kimberly Reed, English and Modern Languages

The protagonist, Raymond Trebeau, is a successful rock musician who is also secretly a young werewolf; something he is very insecure about. He is close to his pack's alpha, Marston Hayes -- also a successful musician -- but he gets annoyed with Marston's unwanted advice and comfortable attitude towards life and their "furry situation." One day after witnessing a disturbing scene between Marston and another member of the pack, Raymond comes back to his apartment building to find a new tenant moving in and literally runs into Mariabella Mellado walking the hallways, becoming instantly smitten with her after he lays eyes on her. His crush quickly turns into obsession and he begins stalking and harrasing Mariabella, convinced she is the answer to becoming human again. Marston does his best to warn Raymond away from this dangerous path, but Raymond stubbornly rebels and refuses to listen. In the background of all of this, there is a serial killer on the loose in the city whose particularly brutal killing style emulates that of a werewolf and Marston cannot help suspecting that it is Raymond taking his hurt over his unrequited affections out on innocent victims. His suspicion causes the rift already appearing between them to widen, but in the end is what also prevents Raymond from giving completely in to his animal side.

The Weight of a Story in Tim O'Brien's *The Things They Carried*

Ryan Wilson and William Steele, English and Modern Languages

Tim O'Brien's historical fiction, *The Things They Carried*, follows the lives of the men of Alpha Company. O'Brien tells stories of the soldiers' loves, fears, responsibilities, and hopes. The stories of Alpha Company bring life and intricacy to the war: O'Brien asserts that war is complex, it is not simply good against evil. In the paper, I argue O'Brien delineates the complexity of life through the telling of stories: O'Brien uses stories to bring the dead to life, address alienation, deepen internal conflict, and create moral gray areas. The motivic storytelling in *The Things They Carried* exemplifies the effect a story can have on an individual. In this paper, I claim that stories are the heaviest burdens the soldiers carry: to withhold a story is to carry the possibility of change.

Simulations

Meg Provenzale and Jan Harris, English and Modern Languages

In Meg Provenzale's collection, *Simulations*, the lyric speaker explores the interactions between parents and children, ideations of self, and looking for connections with the nature and wider world. The speaker confides in her audience "I could not tell you why I was drawn to sit listening closely." Yet, she remains alert with "my mind awake" as time and relationships ebb and flow around her in "the ceaseless cycle that I watched." Provenzale's collection reverberates with her speaker's observations about the beings, be they humans, trees, sandpipers, or bees, whose songs and motivations, shape her world.

Agrarian Social Structure: Flannery O'Connor's Greenleaf

Kate Proffitt and Jan Harris, English and Modern Languages

Strong social institutions have prevailed as central themes in much of Southern literature. Flannery O'Connor's short story "Greenleaf" distinctly emphasizes the role of agrarian social structure. O'Connor constructs the social hierarchy of the rural South within "Greenleaf" through the character of Mrs. May, her invisible dependency upon Mr. Greenleaf, and her constant need to control the bull that continually invades her property. While Mrs. May benefits from the profits of Mr. Greenleaf's labors, she cannot be bothered to concern herself with the work he does to ensure the farm is run successfully, and she views herself as superior to Mr. Greenleaf because of her rank on the social ladder. O'Connor's representation of the power structure within "Greenleaf" portrays the alienation that entraps Mrs. May and her inability to understand what she cannot control, an ignorance that ultimately consumes her.

Methods of Combatting Dialect Suppression

Karin Denney and Stacia Watkins, English and Modern Languages

The power/prestige dialect of a society is taught to children during the most impressionable periods of language development. Children do not necessarily begin life speaking or hearing the power/prestige dialect in their home; their "mother dialect" may be a dialect that is viewed as "unequal" or "less than" the Standard. This marginalizes students and causes a negative effect on culture where it minimizes the influence of sub-Standard English speakers, but in recent years there has been a surge in new thinking to reinvent current discriminatory pedagogy and accept all dialects of English as valid and important. The reinvention and introduction of teaching styles will greatly aid students throughout their life, whether it be through techniques like code-switching, defined as choosing the language appropriate for the time, place, audience, and communicative purpose, or code-meshing, the act of combining dialects rather than separating them. Schooling in the United States requires a paradigm shift grounded in linguistic and cultural negotiation rather than a right dialect/wrong dialect debate. Linguistic diversity must be appreciated.

Thomas Fowler's Existential Theology in *The Quiet American*

Kaylee Newland and Jan Harris, English and Modern Languages

Graham Greene's 1955 novel *The Quiet American* explores the Vietnam War from the perspective of British journalist Thomas Fowler. Fowler claims to be an unbiased commentator, but emotional unrest leads him to choose involvement over neutrality, a choice which demands that Fowler remain planted in his secular existential beliefs or take a leap of faith in accepting theistic existentialism. Fowler's existential beliefs emerge in his conversations with his American friend, Alden Pyle, and his conversations with the French Lieutenant, Vigot. During his conversations with Pyle, an idealist, Fowler attempts to use secular existentialism to shock Pyle into self-awareness; however, after Fowler engages, he neglects to participate in self-awareness. Therefore, Fowler's conversations with Vigot consist of Vigot trying to shock Fowler in being self-aware and recognizing that he has become a theistic existentialist. Green uses the conversations to reveal Fowler's shift from secular existentialism to theistic existentialism, and he links Fowler's theology to existentialism in order to highlight the parallels between secular and theistic existentialism.

The Others in E.M. Forster's *A Room With a View*

Rachel Brooks and Jan Harris, English and Modern Languages

E.M. Forster's 1908 novel titled *A Room with a View* follows Lucy Honeychurch, a young English woman, on a holiday in Italy. Due to the cultural and political differences between the British and Italians in the early 20th century, Forster's novel can be read using a postcolonial lens to identify Others. The British tourists that Lucy stays with visit the typical tourist locations and marvel at the Italians, whom the British describe to be simple or childlike. In this way, the Italian people are Others when compared to the British travelers. Two of the Others are also part of the British travelers' group, Mr. Emerson and his son George, who prefer the Italian countryside and people to the churches and museums. The Emersons do not follow the typical British tourist type developed in the novel. Lucy speaks often to the two men, learning about their different views of Italy and travel. The Emersons represent Other figures from the beginning of the story, and they aid in Lucy's development into an Other figure. Lucy becomes Other through her experiences in Italy and her relationship to George Emerson. In the end, Lucy fully transforms into an Other and identifies with the Italian country over her native home of England.

The Historical Significance and Transformation of Idioms

Savannah Summers and Jan Harris, English and Modern Languages

Idiomatic phrases first appeared in the English language thousands of years ago, and new idioms continue to add humor to the language today. In the past, speakers of English were more distinctly separated by status and education, but idioms and their phrases facilitated communication among different groups and classes of English speakers. This research blends English language history and grammar to discuss a timeline of idioms from their origin to present day. Idiomatic expressions, housed within the linguistic category of slang, can vary from region to region and fluctuate in popularity based on culture and time period of origin. Idioms are also heavily influenced by immigration and word borrowing from other cultures. Through comparing and contrasting idiomatic variations, like lexical and phrasal idioms, or idiomatic phrases and idiomatically combining expressions, the colloquial sayings evolve in both speech and writing, keeping pace with language changes.

Pedagogy with a Purpose: Using Dialects to Prepare Students for Diverse Futures

Mary Welch and Jan Harris, English and Modern Languages

Due to English Language Arts class's ever-changing curriculum and expectations, school teachers in the American English classroom must regularly adapt to best serve their students. Upon entering the classroom, students have diverse language backgrounds. Despite their students' differences, a consistent goal of English teachers is to help the whole class master Standard Academic American English. To accomplish their goal and accommodate all students, teachers should consider a revised pedagogy characterized by an understanding of linguistic principles. Through teachers' revised approach, students can benefit from instruction that enlightens them to linguistic patterns that span various languages and dialects. Thus, students will learn not only what the rules of Standard Academic American English are, but also why and how those rules of the language function. A way English teachers in the American classroom can nurture a deeper linguistic understanding in their students is through pedagogy that recognizes dialectic variation. If teachers incorporate dialectic variation into their instruction, students will have a keener sense of metalinguistic awareness and a consequent stronger command of language. With a stronger command of language, students will harness the power not only of Standard Academic American English to better prepare for professional success, but also of their personal voices to more effectively communicate with the diverse audiences and for the various purposes they will encounter outside their English classrooms.

Virginia Woolf's *The Waves*: The Process of Individuation in Moments of Being

Carson Ford and Jan Harris, English and Modern Languages

In her 1931 novel, *The Waves*, Virginia Woolf re-imagines moments of being. Woolf's stream of consciousness style weaves together the lives and voices of six friends, bringing each of her characters into moments of being that help or hinder their process of individuation, and the blending of the conscious and unconscious. *The Waves* highlights Carl Jung's individuation. Jung proposed the necessary steps to individuate including: confronting the unconscious, dethroning the persona, accepting one's dark side, accepting one's anima or animus, and transcending. The female characters of *The Waves*, Jinny, Susan, and Rhoda, all experience significant moments that they carry with them from one stage of life to the next. At each stage, Jinny, Susan, and Rhoda, must choose to continue their progress towards individuation, to push past predisposed tendencies, or to remain stagnant in the process never to completely individuate.

The American Love/Hate Affair with Nabokov's *Lolita*

Laura Jernigan and William Steele, English and Modern Languages

American society has an interesting habit of being very tolerant of violence, sex, and other taboo and controversial subjects in the media, while maintaining a strict, unspoken moral law. Materialism and consumerism, as well as the concept of total freedom (of sexuality, domestic life, personal expression, speech) are at the very heart of the American dream. It's the "anything goes" mentality with a few caveats—namely where children are involved and when there is a definitive good and bad side of an issue. But what happens when the faint lines of American moral laws are crossed? Immediate condemnation of the offending entity. Nabokov's *Lolita* falls under harsh scrutiny in American society, namely because of its frank portrayal of pedophilia. It also reminds us of the less savory aspects of American culture and the price we pay to live in it. Thus, as with most offensive materials in America, we assign a harsh moral judgment to the novel. As if the issues it explores could not possibly happen in modern times, *Lolita* has earned a cultural status as taboo, and is usually confined to the era in which it was written. *Lolita* is entirely relevant to current American culture and society.

Miyagi and the Fly

Nazar Haji and Matthew Hearn, English and Modern Languages

Nazar Haji's nonfiction piece, "Miyagi and the Fly," centers on Haji's time training in Krav Maga, the Israeli Military's Self Defense and Fighting Style adjusted to be taught to civilians. Over time, Haji tells of his growing infatuation with his training and the techniques he learned. Until one day, Haji's confidence was shattered by a Goliath-sized opponent. In the weeks that followed, Haji lost again and again, but with each passing fight his skills continued to accrue, particularly once he began applying the lesson of Miyagi and the Fly. Haji's essay weaves a self-deprecating wit together with humorous descriptions to tell a story of overcoming fear and anger through defeat, and learning how to move into a new level of understanding through get comfortable in uncomfortable situations.

Resistance in Oppressive Societies in *The Crucible* and *The Hate U Give*

Taylor Shannon and Stacia Watkins, English and Modern Languages

Reverend Hale from *The Crucible* and Uncle Carlos from *The Hate U Give* are both characters that have participated in an oppressive society: Hale as a minister of the court and Carlos as a contemporary police officer. After witnessing the hardship of the protagonists in these novels, Hale and Carlos begin to realize that their court systems don't always provide their citizens with the justice they deserve. In *The Crucible*, Reverend Hale must contend with false convictions in a supposedly fair court system. His sympathy for the accused forces him to decide between encouraging the prisoners to sin by lying or to feign ignorance and continue to let the courts murder the town. In *The Hate U Give*, Uncle Carlos faces a similar issue in his community. After one of his white colleagues gets away with the murder of a black teenager, Carlos must choose between supporting his black community or supporting his station. These characters must determine what it means to be a figure of authority in a broken system and how they can resist the injustice in their societies. This paper will explore how fear of the unknown has the power to condemn a seemingly unshakable justice system and how the consequences of this uncertainty transcends throughout history.

Neologism: Word Compounding and Word Formation to Add to a Language

Ashley Burklin and Jan Harris, English and Modern Languages

Languages define a culture as it continually ebbs and flows through patterns of linguistics to meet the needs of their speakers. Languages live, they grow and decay, they strengthen and die out. However, no language is pure, all languages are mixed in some way or another. McWhorter in his book *What Language Is and What It Isn't and What It Could Be* defines language as mixed. He says, "Languages are always impure. There are too many of them on this planet for any one of them to have remained only itself" (198). Language mix is the beautiful consequence of cultures mingling, meeting, and rubbing up against each other. English is a perfect example of one of those mixed languages. Finding its beginning roots in German, Norman French, and Latin, English is the master of language adoption. By borrowing and word compounding, speakers of English, even today, create neologisms to broaden their language. Language expansion offers its speakers the ability to express themselves more fully and exactly. The analytic structure of the English language lends itself to growth through creating or borrowing words; and these words adapt through a weak system of inflections to meet multiple needs and promote communication.

When Greenland Comes to Haiti

Sam Hearn and Jan Harris, English and Modern Languages

Graham Greene notoriously manipulates the settings of his novels. Typified by squalor, poverty, and crisis, his settings create a distinct environment that scholars often refer to as “Greenland.” The Comedians exemplifies Greene’s inclination towards this atmosphere, and in this paper I will propose that the geography of the novel substantially drives both its characterization and plot. As an overarching setting, the sociopolitical status of the island of Haiti under the rule of “Papa Doc” Duvalier consistently threatens the physical, professional, and social security of the characters. On the island itself, locations embody specific significance to the characters; they become places not only of safety and danger, but reflect qualities such as promise, despair, sensuality, or fear. While Greene crafts many of these elements organically in the story, the nature of the setting also incorporates Orientalism into the characterization of the novel. I will use Edward Said’s research on Orientalism as well as research on Greene’s novels specifically set in the Orient to qualify his depiction of Haiti as a product of Orientalism. I will draw a distinction between the narrator/protagonist Brown and the author Greene in order to utilize Brown’s western identity as foundation for the interpretation of the events in the novel. It is Brown’s body that exists in these locations, and his voice that tells the story, so it is his interpretation that makes geography significant in *The Comedians*.

Translating Imperfection

Jordan Cumberledge and Jan Harris, English and Modern Languages

A translator must take into account more than a word’s denotation. Language changes constantly, and words carry, not only denotative meaning, but also cultural and connotative meaning which creates challenges for translators. Despite its unavoidable flaws, however, humans continue to translate literature and other texts into different languages. Translation can never be perfect yet still remains a worthy venture, because shared texts from different language and culture backgrounds increase global understanding and world connection.

The Sacramental Utterance: Speech Act Theory in Charles Williams’s *Descent into Hell*

Lila Banach and Jan Harris, English and Modern Languages

This presentation, titled “The Sacramental Utterance: Speech Act Theory in Charles Williams’ *Descent into Hell*,” explores the function of speech act theory in Charles Williams 1937 novel, *Descent into Hell*. The presentation focuses particularly on how speech act theory contributes to Williams’ theological framework characterized in part by the Doctrine of Substituted Love, which is introduced in the 6th chapter of the novel. I begin by describing the primary components of Williams’ theological framework relating to the Doctrine of Substituted Love, particularly the concept of co-inherence. The presentation continues by illustrating how the language exchanged between Peter Stanhope and Pauline Anstruther gives way to a speech act that illustrates the presence of the sacramental in the novel. Charles Williams’ theological framework involves a transcendent connection between members of the body of the church. In *Descent into Hell*, The Doctrine of Substituted Love initiates the fulfillment of the eternal connection through utterances within the novel, connecting the novel’s theological premise to speech act theory. The connection between members of the church body, which Williams calls “co-inherence,” is a sacramental practice in and of itself, illustrated by the Incarnation. The sacramental nature of co-inherence gives further insight into Williams’ theological framework, especially as it relates to time. I conclude the presentation by illustrating how the sacramental utterance within the novel manifests outside of the constructs of chronological time.

Nachfolge, "Following": A New Translation of Bonhoeffer's Critical Work on Discipleship.

Jonathan Geeslin and Cecelia Ramsey, English and Modern Languages

Originally written in German by one of the most inspiring, relevant Christian martyrs of the 20th century, Dietrich Bonhoeffer's "Nachfolge" is a powerful treatise on Christ's call to follow. However, the English translation of this critical work by Fuller and Booth fails to preserve Bonhoeffer's unique style, iconic lexical richness, and sound, well-developed, logical constructs. Most notably, Fuller and Booth's translation has been found to omit significant portions of the original text from time to time. For this reason, and out of a deep conviction that Bonhoeffer's treatise ought to be heard as from his own heart and pen, this paper seeks to further reveal Bonhoeffer's work to an English-speaking audience by beginning a fresh translation of "Nachfolge." Drawing heavily from the work of such theorists as Friedrich Schleiermacher and Antoine Berman, this translation seeks to preserve the foreign in the translated text and to avoid the deforming tendencies common in translation. Calques have been used extensively to preserve imagery, reflecting Bonhoeffer's frequent use of neologisms. English syntax has been liberally manipulated in order to preserve Bonhoeffer's cognitive flow. Cognate words, moreover, have been preferred when making lexical choices in an attempt to preserve what will be referred to as euphony, namely, the spirit and flavor of words and phrases. This paper seeks to apprehend what Schleiermacher calls the "lebendige Kraft," the living force, that Bonhoeffer applies to his own language, and to enable that selfsame force to shape the English language, in turn, as Bonhoeffer shaped his own.

Psalms 23: A Common Misunderstanding Questioned by the Spanish Bible

Sarah Rosin and Ted Parks, English and Modern Languages

Many people would acknowledge that Psalm 23 offers some of the most consoling words of scripture. However, does the traditional understanding of this psalm only allow us to see the emotions expressed by the psalmist at the surface. In this paper, I argue that what recent biblical scholarship has discovered as the setting and theme of Psalm 23--that the biblical text expresses a trust rooted in lament--has ironically been present in Spanish translations of the Bible for centuries. As Derek Kidner affirms, "Depth and strength underlie the simplicity of this psalm. Its peace is not escape; its contentment is not complacency: there is readiness to face deep darkness and imminent attack, and the climax reveals a love which homes towards no material goal but to the Lord Himself."

Poor Little Boy: Emotionless Tragedies in Evelyn Waugh's *A Handful of Dust*

Julie Sarvak and Jan Harris, English and Modern Languages

Evelyn Waugh's satire *A Handful of Dust* develops as Tony and Brenda Last interact in comedic and horrific incidences, illuminating the lack of compassion and emotion found in British society. Critics suggest that Tony appears phony like his city friends, keeping him from feeling compassion and emotion when tragedy occurs in his life. After Tony's son John Andrew dies, Tony's placid response illuminates his improper priorities, revealing his alienation from John Andrew and Brenda. However, Brenda's response to John Andrew's death is more shocking than Tony's and reveals the lack of emotional depth in Waugh's characters. Rather than allowing the Lasts to grieve and process death, Waugh's narrator employs a Juvenalian satire that asks readers to consider how a character's response to personal tragedy and reflects the dysfunction of their society and class.

Subversion of Ideal Masculinity in Woolf's *The Waves*

Amy Hall and Jan Harris, English and Modern Languages

Virginia Woolf presents various aspects of masculinity through the four male characters in *The Waves*. Percival represents ideal masculinity which draws the other male characters to him and makes Percival a central character in the work. Despite his ideal qualities, Percival is the only main character who does not speak in the novel, despite his ideal qualities, which contradicts traditional expectations of masculinity. This essay explores Woolf's subversion of ideal masculinity through Percival's silence and emasculation, as well as her development of the other three male characters as stereotypes. Woolf demonstrates heteronormative domesticity, homosexuality, the gaze, and work experience through the three male characters while Percival, the ideal male, remains silent. Woolf criticizes traditional societal expectations and stereotypes through Percival, Bernard, and Louis and uses Neville to demonstrate the positive impact of abandoning ideal social expectations. Woolf's writing of her male characters in *The Waves* highlights issues with the social construct of masculinity and subverts the traditional role of the ideal male by removing Percival's power in the novel.

The Pitfalls of Paul Pennyfeather

Meredith Neilson and Jan Harris, English and Modern Languages

Evelyn Waugh's 1928 debut novel, *Decline and Fall*, outlines the pitfalls and perils of Paul Pennyfeather. Pennyfeather, who lacks a basic character arc, and leaves the world of *Decline and Fall* just as he entered it. The audience witnesses one injustice after another being thrust upon Paul throughout the novel, while the other characters have little or no appropriate reaction on Paul's behalf. Paul and his fellow nonplussed characters are, as Kazuhiko Saigusa suggests a reflection of the "pervaded society, the lingering aftermath of the unprecedented disaster [of] the First World War" (17). 1928 was ten years after World War I ended, but Evelyn Waugh was able to capture the pains, brought by reconstructing a country, through satire and poking fun at stereotypical societal constructs. Waugh's talent for creating satire that reveals the flaws of society, allows him to use the pitfalls of Paul Pennyfeather to spark a dialogue with his readers about the chaos upon which the modern world is built.

Colonialism's Effects on being in Touch with Nature, Oneself, and Others within *A Passage to India*

Leslie Shakira Garcia and Jan Harris, English and Modern Languages

E.M Forster's *A Passage to India* highlights the colonial relationships and the struggle for connection within British Raj's society. This research examines how the characters' exposure to the physical nature of India highlights the divisive nature of colonial rule within British Raj. It will look at the historical implications of colonialism in 19th century India. Likewise, it will highlight how the use of animals and the physical world within the novel relate to modernist ethics. The paper will build upon the work of Edward Said and Stephen Ross who identify the epistemological and ontological effects of colonialism and orientalism. This research will focus on the impact of colonialism on human relationships and it will highlight moments of transcendence that occur when exposed to the nature world being colonized.

War: What is it Good For? Examining Pre- and Post-war Gender through James Thurber and *The Secret Life of Walter Mitty*

Hannah Robertson and Dana Carpenter, English and Modern Languages

My main texts consist of James Thurber's short story "The Secret Life of Walter Mitty" and the 1947 film adaptation by Norman McLeod. I approach each text through a feminist lens while examining the historical implications of the pre- and post-World War II approach to gender issues through the humor they employ. Through research, I illuminate how in each case, humor acts as an important tool to demonstrate the flaws in the existing stereotypes of Thurber's pre-war era and the ramifications and alterations surrounding gender that occur post-war through McLeod's film. Thurber's character of Walter Mitty is emasculated by his wife throughout the entire text and is never accepted for the daydreamer he is; in contrast, McLeod's Mitty finds love and approval through his relationship with Rosalind. This difference presents a shift in gender roles from pre- to post-war. Both texts take advantage of different types of humor; Thurber's use of word-play and stark shift from reality to imaginary through language is apparent in the film adaptation but McLeod also utilizes slapstick and physical humor heavily. I focus on how these differing types of humor support the messages each text is presenting. In my paper, I dissect the differences between Thurber's approach to gender roles and McLeod's approach. I apply the concepts of gender issues pre- and post-war to each text and examine the alterations which occurred in the realm of gender through the contrast in Thurber's short story and McLeod's adaptation.

Decay of Inflections from the Norman Conquest

Rachel Maroon and Jan Harris, English and Modern Languages

The English language has gone through periods of great change from the time it was first established, during the Old English period, to its Modern English period. Throughout these periods of change, the English language has experienced a decay of inflections, which has helped morph it from a synthetic language to an analytical language. The phrase decay of inflectional endings is any of a way words go through changes. It is the process of losing inflections at the end of words, keeping the meaning of the words the same but changing the word's phonetics. By going through this process, a language can become more pliable, allowing words to be more easily transferred between different languages. The cause of this change can range from anything from extralinguistic factors to other countries' influences, but this paper looks at how the Norman Conquest and the Scandinavian invasions influenced the English language and caused a decay of inflections during the late stages of the Old English period and the early stages of the Middle English period.

The One with all the Slang: An analysis of Friend's Role in Popularizing Slang

Kira Dunton and Jan Harris, English and Modern Languages

Friends, the popular sitcom about a group of thirty-somethings living in New York City, has garnered a widespread audience. *Friends* remains popular nearly 25 years after its premiere through syndication and streaming services like Netflix. Due to the show's continuing popularity, viewers are presented with an opportunity for linguistic identification, which is necessary in order for the show to affect the language of its audience. *Friends* introduces and popularizes slang into both interior and exterior speech communities surrounding the show, mediating the exchange of language through the emotional filter of fan communities and casual communities. *Friends*' influence provides a case study for the ways television can influence the language of an audience, bringing new meanings and registers for words like lobster, unagi, and friend-zone.

A History of Enmity: Exploring Irish/English Conflict Through *The Short Stories of William Trevor*
William Mathis and Jan Harris, English and Modern Languages

As a Protestant in the tumultuous Catholic world of Ireland, William Trevor understood the tensions of modern Irish history because he lived in the divide between Northern Ireland and the Republic of Ireland. Trevor's work can shed much light on modern Irish violence and its history, as well as provide personal perspectives on the events and emotions. Three stories relate personal narratives in three different periods, showing a historical progression leading up to the state of Northern Ireland today: "The News from Ireland," "The Distant Past," and "Beyond the Pale." In these pieces, Trevor tells of Ireland's hardships from The Great Famine to the IRA violence in the '90s. Trevor leads his readers into personal stories of Irish violence, giving them insight into the true nature of the conflict, for it can be easy to ignore conflict across the world, to write off violence and terrorism as the acts of broken and terrible people, to remove the humanity behind bombs and bullets. Trevor reminds his readers that "bombs don't go off on their own," and history was lived by real people. Real people starved while the English watched, real people tried to live together with the long history of hatred, real people built those bombs, real people killed or were killed for their beliefs. Trevor brings the reality back to Irish history, and if the reader reads carefully, Trevor brings the human reality back to conflicts across all of time and space.

Discovering the Incomplete Narrative of David Lipscomb and Slavery

Jacob Malmstrom, Alyssa Ollis, Emily Ridings, Sheri Jones, and Richard Goode, History, Politics and Philosophy

Lipscomb University seeks to be a progressive Southern Liberal Arts University. In an effort to convey the University's dedication to progressive ideals, they draw to light the exemplary lives of their founders. One narrative the University highlights repeatedly is the heroic decision and sacrifice of the Lipscomb family freeing their slaves in 1834. Research has revealed, Lipscomb's family did indeed free some of their slaves in 1834; however, upon their return to Tennessee they acquired more. Approximately ten years after the journey to Illinois, Granville Lipscomb, David's father, owned slaves and wrote in his will for his slaves to be inherited upon his death. After the discovery of the 1860 census slave schedule, it was found that David Lipscomb himself also owned slaves. Research into census records, wills, and other primary source documents illustrate that the record of the Lipscomb family on the matter of slavery is more complex than typically acknowledged. Therefore, the current narrative being told by Lipscomb University is not entirely complete and should be amended to include Lipscomb's life and interactions with slavery after the 1834 journey.

Understanding Our Founder's Views on Race

Gabriella Cannone and Richard Goode, History, Politics and Philosophy

The fact that David Lipscomb owned slaves in 1860 is only the beginning of the narrative that the University must tell. The long arc of Lipscomb's views on race reveals that the outspoken Christian figure was regressive regarding slavery. In other words, his beliefs on slavery and race were those all too typical of the Jim Crow South. David Lipscomb saw slavery as a "necessary evil," which benefited and civilized Black Americans. Academic communities across the nation (e.g., Georgetown and MIT) are researching the history and beliefs of their founders. Today's Lipscomb community must also discern the attitudes of its founders so that current and future students have a more complete narrative of the founder. This research is presented with the hope of providing a doorway for growth, transparency, and open communication and continuing reconciliation.

"It Looks Pretty White in Here to Me": Lipscomb University's History of Race Relations, 1950s to Present

Jesse Lippincott and Richard Goode, History, Politics and Philosophy

In its past, Lipscomb University was a segregated university with a violent, vehement opposition to African-American representation on its campus. Today, Lipscomb University is a university whose statistics show that they have a large minority representation on campus. However, while Lipscomb's numbers tell one story of the University's attitudes toward minorities, the actions of the administration portray a different narrative. This paper will look at the history of Lipscomb, specifically focusing on Athens Clay Pullias, the university president during the height of its segregated era, as well the administration at the time in an effort to create a picture of the University's view of African American students during this time. Next, the paper will look at a modern vision of the University's policies, focusing specifically on university president Randy Lowry and today's administration. The history of Lipscomb's segregation is one that has many different angles and justifications, and this paper will attempt to expose the discriminatory views of the administration of that time. The paper will provide an overview of the views of Lipscomb throughout the past six decades regarding race relations and the treatment of minority students. Additionally, it will provide some solutions for the university to create a more inclusive atmosphere for minority students.

The Position Of Women In SNCC: Prone Or Progressive?

Lauren Anderson and Richard Goode, History, Politics and Philosophy

In recent years, the Student Nonviolent Coordinating Committee, herein referred to SNCC, has fallen under criticism by modern feminists for supposed sexist attitudes and actions. Many of these accusations stem from an anonymous position paper on women and a decontextualized statement by Stokely Carmichael. However, upon further examination, it becomes clear that these two items do not accurately represent the attitude of organization as a whole, or the attitudes of some of the individuals in question. This paper will also explore one of the founders of SNCC, Ella Baker, a woman who left work with other civil rights organizations of the day due to her frustrations with patriarchal leadership. Because of this, she created a unique anti-hierarchical system of leadership which focused on the group decision, rather than the individual, inherently necessitating the need to hear from the female voices. Also included in this paper are the thoughts and testimonies of several women of the organization who all praised SNCC for its efforts to give women autonomy and independence in their work. All of this leads to the conclusion that despite the accusation of many of these modern feminists, SNCC empowered its women and was a forerunner, during the Civil Rights movement, for women's progressivism and female leadership.

International Human Trafficking and Its Root Causes

Lynn Gurskey and Susan Haynes, History, Politics and Philosophy

The pervasiveness of human trafficking is undisputed. To be effective in combatting this shape-shifting societal epidemic, we must understand its root causes and triggers. The current literature focuses predominately on individual-level factors contributing to someone being trafficked or becoming a consumer in the industry. Only a minority of studies take a macro approach, examining the effects of policy and social constructs on the prevalence of human trafficking. This study employs a large-n statistical analysis to answer the question: Why do rates of human trafficking vary between countries?

Racial Relations at Lipscomb: Then and Now

Deion T Sims and Richard Goode, History, Politics and Philosophy

For only twenty-five years, from 1942 to 1967, the Churches of Christ in Nashville sponsored the Nashville Christian Institute, a K-12 school for African Americans. When men associated with David Lipscomb College closed NCI's doors permanently because of financial hardship, racial tensions surfaced, and a rift was created between the NCI community and David Lipscomb College. In recent years, Lipscomb University has made attempts at reconciling this past in hope of mending this rift. Drawing upon the Lipscomb archives and personal interviews, this paper explores the brief history of NCI, its forced closure by Lipscomb affiliates, the disappointing history of Lipscomb and segregation, and Lipscomb's recent attempts to make amends. Using this information, the paper compares Lipscomb during the time of the closing of NCI with present-day Lipscomb to explore the efficacy and adequacy of Lipscomb's efforts to placate the NCI community. Based on responses from those interviewed and current literature on what constitutes an appropriate apology, this paper concludes that although Lipscomb University's latest attempts for reconciliation are admirable; by themselves, they are not the right antidote for the ills they have caused.

The Relevance of Double-Consciousness in Today's Black America

Lesley Walker and Caleb Clanton, History, Politics and Philosophy

W.E.B. Du Bois first introduced his idea of Double-Consciousness in his 1903 work, *The Souls of Black Folk*. Double-Consciousness is a concept centered around the idea of "twoness" felt and caused by the racial oppression and discrimination that surrounded black Americans at the time. Du Bois writes about the "veil" and the "second-sight" with which all black Americans are gifted. According to Du Bois, these gifts cause black Americans to measure themselves against the opinions of others who often think of them with contempt. Du Bois' explanation of these sensations has been picked apart, contested, and refuted dozens of times since its conception. In this paper, I discuss the different interpretations of Du Bois' double-consciousness theory and how many philosophers limit or misunderstand the value of his discovery. After analyzing the refutations and explanations of Du Boisian double consciousness, I will argue that double-consciousness is still a valid method of comprehending the psychological identity of the black person in America, and that the contemplation of Du Bois' theory is a necessary step for both blacks and whites in finding solutions to the issues of race.

Doubting Logic

Christopher Hebert and Caleb Clanton, History, Politics and Philosophy

Ren's Descartes employed a now iconic method of doubt in his seminal work on first philosophy at least in part for the purpose of defending his conclusions against a contemporary resurgence of both Pyrrhonian and Academic skepticism. Descartes's approach led his meditator to consider reasons to initially doubt mathematics (and, by implication, logic and logical principles) before attempting to salvage that which could still be found certain. In this paper, I consider how the depth of the meditator's doubt included even the Principle of Noncontradiction, a pillar of classical logic without which Descartes's meditator would be hopelessly lost. In particular, I argue that withholding assent to the Principle of Noncontradiction actually implies withholding assent to an infinite set of acknowledgements, which may well be logically impossible unless the Principle of Noncontradiction were in fact false. Thus, withholding assent to the Principle of Noncontradiction, as Descartes's meditator appeared to do, is equivalent to assenting to its falsehood.

Ready or Not; Redefining College Readiness for Kentucky Students

Meredith Crockett and Randy Spivey, Law, Justice, and Society

The book *Ready or Not: Stories from Students Behind the Statistics* aims to redefine college readiness by exploring the social, academic, and economic tripwires preventing Kentucky students from entering higher education. *Ready or Not's* authors are part of the Prichard Committee Student Voice Team, consisting of 100-plus self-selected students who work as education research, policy, and advocacy partners to improve Kentucky schools. After several years of investigating the inequalities inherent in postsecondary transitions, the Student Voice Team decided to be more intentional about lifting the voices of Kentucky's least-heard students. This project attempts to elevate more of the lived experiences of students transitioning from the K-12 system and their thoughts on what policymakers could learn from them. *Ready or Not* was written as a book of stories collected from our year of talking to other young people across Kentucky about navigating the transition after high school. Along with the book, the Student Voice Team designed and disseminated an original 130-question survey to seniors in five geographically diverse high schools across Kentucky. The four major themes we extracted are: too many students in Kentucky are not sold on the value of college, family support can make a massive difference, yet too many Kentucky students feel they don't have it; the primary tool to measure college readiness, the ACT, reflects and possibly even perpetuates inequity; and Kentucky has a school counseling crisis.

The Effects of Listening to Music on Performance During a 1.5 Mile Run Test in Non-Athlete College Students

Samie Anderson, Lindsey Benson, Shayne Bourque, and Ruth Henry, Kinesiology

Background: Researchers have found that music acts as a stimulant on the brain. The distraction music provides increases performance and decreases perceived exertion during a timed run test. The purpose of this study was to determine whether listening to music has an effect on performance during a 1.5 mile run in non-athlete college students. Twenty college students participated, ten males and ten females. Each participant completed a 1.5 mile run twice with counterbalanced trials, without music (NM) and with music (Mu). Their heart rates and run times were measured for each trial. The participants rated their level of perceived exertion (RPE). Data was analyzed with independent t-tests to determine the effects of listening to music while running on heart rate, RPE, and run time. Means, standard deviations, and p values were: heart rate change = 66.3 ± 18.1 bpm (NM) and 63.4 ± 19.8 bpm (Mu), ($|t| = 0.57$; $p > 0.05$); RPE = 14.6 ± 2.2 (NM) and 14.2 ± 2.5 (Mu), ($|t| = 0.45$; $p > 0.05$); run time = 811.2 ± 97.5 sec (NM) and 801.35 ± 110.3 sec (Mu), ($|t| = 0.31$; $p > 0.05$). These results from showed that listening to music versus not listening to music while running does not have a significant effect on the change in heart rate, feeling of exertion, or run time.

The Effects of Myofascial Release on Running Efficiency

Avery Franklin, Kade Hinkle, Rebecca Robertson, and Ruth Henry, Kinesiology

The aim of the study is to compare the effects of two modalities of myofascial release (foam rolling vs. massage therapy) on the running efficiency of college-aged female cross-country runners. Methods: 11 Female cross-country runners ($n = 11$) completed VO₂ max treadmill tests. Biometric data (height, weight, and BIA) were measured prior. Resting lactate was taken prior, immediate post lactate was taken immediately after cessation, and 2 minutes after. Heart rate and RPE were also measured during the VO₂ max tests. There were 3 interventions. Each subject completed 3 submaximal treadmill tests at about 60% of their original VO₂ max. Prior to each of their submax tests, they were assigned to 1 of 3 intervention groups: foam rolling, massage, or the intervention control group. Resting lactate and IP lactate values were taken. Heart rate and RPE were measured every 2 minutes during the submax test. Results: There was a significant difference in IP lactate values between intervention groups FR and C ($p < .05$). There was a

significant difference in IP lactate values between intervention groups M and C ($p < .05$). There was no significant difference in IP lactate values between intervention groups FR and M ($p > .05$). There was no significant difference in HR between the intervention groups (FR, M, C) ($p = .31$). | There was a significant difference in RPE values between C group and FM, M groups ($p < .05$). Conclusion: The results suggest that pre-run interventions may improve running efficiency in college-aged female cross-country runners.

Effects of Acute Exercise on Cognitive Ability

Spenser Carder, Meghan Jelonek, Johnathon Ramirez, and Ruth Henry, Kinesiology

Researchers have found that acute exercise is related to an increase in cognitive abilities and lack of exercise causes a decrease in cognitive abilities. Participation in acute exercise may temporarily increase cognitive abilities. The purpose of this study was to determine whether exercise produced increased cognitive abilities, and which exercise timing was most beneficial. Twelve participants (age 20-22 yrs) volunteered to participate. Subjects completed two trials of exercise followed by a cognitive abilities test (1-2 hours after exercise and 6-8 hours after exercise) and one trial of no exercise within the past 24 hours followed by the same cognitive abilities test. Exercise consisted of 20-30 minutes of cardiovascular work, reaching a heart rate of 75% max HR. The cognitive abilities test consisted of four separate tests which gave an overall score, memory score, reasoning score and verbal score. Repeated Measures ANOVA was used to determine if acute exercise has an effect on cognitive abilities. Cognitive ability was significantly greater 1-2 hours post exercise than after no exercise, ($M=11.42$ and 9.31 , respectively, $p = .0092$). The 1-2 hours trial ($M=11.42$) and the 6-8 hours trial ($M=10.43$) were statistically equal ($p=.2738$) as were the no exercise vs. 6-8 hours trials ($p=.2021$). Results suggest that acute exercise causes an increase in cognitive abilities, with immediate post-exercise being most advantageous.

Modeling Non-Standard Roasting Profiles of Coffee

Matthew Comp and Brandon Banes, Mathematics

Green Guatemalan Proyecto Xinabajul coffee beans were roasted in a standard S-Curve fashion, which related time and temperature, then four alternative roast profiles were completed. The information gathered while roasting each profile was used to graph, and mathematically model the roast. The various roasted coffees were then, at random, brewed, tasted, and noted for various flavors. Using mathematical techniques, we then evaluated the models we obtained in order to identify specific differences from the standard S-Curve. Those differences were used to help determine how certain flavors were gained or lost within a roast. This gives guidelines to a person roasting coffee at home or professionally as to how altering the roast curve from the standard S-Curve affects the flavor of their roasted beans.

Effects of Long Term Exposure to Extraterrestrial Radiation

Mike Piechocki and Alan Bradshaw, Physics

Humanity is shielded from most extraterrestrial radiation due to Earth's magnetosphere. As humanity seeks to reach beyond the constraints of Earth to other planets and star systems, any human traveler would be subjected to an increased amount of radiation due to solar wind, solar flares, and galactic cosmic events (GCR's) causing the individual to develop an increased risk for a variety of cancers. Therefore, the exposure to extraterrestrial radiation must be reduced to make interplanetary travel a viable option. This presentation analyzes potential options to decrease this exposure and improve the long-term survival rate. As the potential exposure to radiation decreases, the potential risks associated with long-term extraterrestrial travel decrease and the viability of extraterrestrial travel by humanity increases.

The Role of Spirituality in Resilience among Refugee Children I

Olivia Malham, Kaylee Frank, and Holly Allen, Psychology

During the fall 2017 semester, eleven Lipscomb University students spent one-on-one time with eleven children at Nations Ministry Center, an afterschool program for refugee children. The children in this research were between the ages of seven and eleven. My child was "Sydney" (a pseudonym), a ten-year-old girl from the Uganda. Her family has been in the United States for four years. Our work was part of a service-learning course called "Nurturing Spiritual Development with Children." During our time with the children, we walked a labyrinth with the children, read good children's books, shared Godly Play lessons with the children, posed wondering questions, and wrote letters to God. This presentation will overview the literature on children and trauma, common challenges among refugee children, and the role of spirituality in resilience. I will then share the responses of the research participants, "Sydney" and some of the other children, to the various spiritually nurturing activities we experienced together. I will connect the activities with the children's relationships with self, others, the world, and God, and along the way I will address how the student/child experiences intersect with common challenges and needs of refugee children. I am requesting to present with Kaylee Frank (another student in the Nurturing Children's Spirituality course), using two 15-minute presentation slots placed together.

The Role of Spirituality in Resilience among Refugee Children II

Olivia Malham, Kaylee Frank, and Holly Allen, Psychology

During the fall 2017 semester, eleven Lipscomb University students spent one-on-one time with eleven children at Nations Ministry Center, an afterschool program for refugee children. The children in this research were between the ages of seven and eleven. My child was "Reagan", an eight-year-old girl from the Democratic Republic of the Congo. Her family has been in the United States for 5 years. Our work was part of a service-learning course called "Nurturing Spiritual Development with Children." During our time with the children, we walked a labyrinth with the children, read good children's books, shared Godly Play lessons with the children, posed wondering questions, and wrote letters to God. This presentation will overview the literature on children and trauma, common challenges among refugee children, and the role of spirituality in resilience. I will then share the responses of the research participants, "Reagan" and some of the other children, to the various spiritually nurturing activities we experienced together. I will connect the activities with the children's relationships with self, others, the world, and God, and along the way I will address how the student/child experiences intersect with common challenges and needs of refugee children. I am requesting to present with Olivia Malham (another student in the Nurturing Children's Spirituality course), using two 15-minute presentation slots placed together.

An Armed and Dangerous Mind

Zachary Fasig and Paul Turner, Psychology

Violence has been a human issue since our creation. As of late it is as if there has been an increase in acts against humanity such as mass shootings and other forms of violent crime. This is a popular debate today. Regardless if there is an increase of mass shootings or not, it cannot be denied that these acts are getting much more attention both media and public. Many articles have been written on "the mind of a school shooter" or "The causes of a mass murderer"; these articles attempt to list and describe the factors that appear to cause seemingly normal individuals to commit such atrocious acts. I have been doing archival research on mass shootings for half a year now. Some common factors these people have in common include but are not limited to: social rejection, a younger age, white ethnicity, suicide post crime, and loss prior to crime. In this paper I will go more in depth on these and other risk factors, as well as some preventative measures that could be inferred from the existing theories and their statistics.

Addressing Mental Health Topics at Youth Encouragement Services Through Faith-Based Teaching and Conversation

Carly Stamey and Paul Turner, Psychology

Youth Encouragement Services (Y.E.S.) is a nonprofit after school program that gives inner city youth who are considered to be at risk of exposure to violence, drug abuse, crime, and neglect a place to be loved, cared for, and given opportunities to prepare them for a successful future. Within these goals for our students, we have the hope that they will grow in their spirituality. Woodbine Family Church of Christ was born from that dream--that these children would have a Christian family to depend on and help shape them, and a church to call their own. On Wednesday evenings, Woodbine Family offers church classes to the students during Y.E.S. programming. As a staff member at Y.E.S. and youth minister at Woodbine Family, I have a unique and incredible opportunity to contribute in this community. Furthermore, as a psychology student, I understand the importance of recognizing mental health needs of teenagers. For my SALT project, I plan to join the efforts of Y.E.S. of caring for a student as a whole--not their physical well-being alone--by organizing a series of Wednesday night classes for the teenagers that will provide education and start valuable conversations from a faith-based perspective regarding stress and mental health. Moving forward, the ministry of Y.E.S. and Woodbine Family will continue in our work of lessening mental health stigma, promoting healthy habits, and offering a safe space to students by appropriate and ethical means.

How Does the Availability of Community Resources to an Identified Low-Socioeconomic Community Affect Patient Care Compared to the Availability of Community Resources in Other Socioeconomic Communities?

Ayesha Harris and Christin Shatzer, SALT

A resource guide is a tool that clinics, such as Hope, Health and Healing, need to provide resources to their patients that best fit their needs. The goal of this project is to conduct research and design a resource guide to give to the clinic's patients. The Hope, Health and Healing clinic needs a resource guide so they can adequately give patients the best options for affordable resources in their community. A resource guide would bring consistency among the other health care providers when providing referrals. A resource guide for this clinic will allow them to have easy access to resources that may or may not be known and to help the patients of the community get the care that they can benefit from. In my research, I reviewed other non-profit clinic data and used the Community Health Assessment to identify the health needs in Davidson County. The Community Health Assessment is conducted by Vanderbilt, Saint Thomas, Siloam, and other health institutes. After the review, I designed a resource guide that would be most beneficial to Hope, Health and Healing's providers and their patients. Most patients and providers at this clinic would benefit from a hard and digital copy of the resource guide. By designing a resource guide and staying up to date with the Community Health Assessment, Hope, Health and Healing will be able to better serve their community. In my presentation, I will discuss my research, findings, methods, and recommendations.

Principles of Adult Learning and its Impact on Understanding Disease States in Healthcare Ecosystems

Sena Seged and Christin Shatzer, SALT

Adult learners bring a new perspective and self-awareness to learning that younger learners are not able to. Educators have determined that most adults learn best by experiencing a blend of learning domains with hands on engagement. In order to involve adults in their own learning while also observing adult learning principles, instructors should incorporate interactive learning in their instructional methods. This paper will outline some of the key principles of adult learning and instructional learning systems that are meant to enhance an adult learner's ability to retain information, while also highlighting some examples used to promote effective adult learning in an educational and workforce setting. Additionally, this paper provides recommendations for the Dispensary of Hope (DoH) and how they can effectively construct adult learners through monthly staff-development training presentations. This will be part of the DoH workforce development to enhance the team's knowledge on healthcare to better understand how Dispensary of Hope fits into the healthcare ecosystem, and how the medications they carry can make impacts on common disease states affecting many Americans.

Poster Presentations

Graduate Students Poster Presentations

The Localization of the TLR 4/MD 2 Complex in colonic Epithelial Cells after Stimulation with Short-Chain Fatty Acids

Katherine E. Ankenebauer, Kacey J. Kemper, Taylor Wright and Jon Lowrance, Biology

The human intestinal microbiota consists of a diverse and complex array of microbes and plays a pivotal role in regulating gut homeostasis and inflammation through the production of several by-products. One of these products, short chain fatty acids (SCFAs), are produced by anaerobic bacteria in the small bowel and include acetate, butyrate, and propionate with acetate being the most common. SCFAs appear to have important roles in maintaining the epithelial barrier, regulating inflammation and can either enhance or suppress the immune response. Previous studies in our lab and others have shown that SCFAs directly modulate the activation of Toll-like receptor 4 (TLR 4), a type of pattern recognition receptor (PRR) that recognizes pathogen-associated molecular patterns such as lipopolysaccharides. Myeloid differentiation-2 (MD 2) is a TLR 4 accessory protein that is critical for LPS responsiveness. Previous studies in our lab have shown that TLR 4 is localized nearly exclusively to the membrane in normal colonic epithelial cells, suggesting that MD 2 is also localized to the membrane. However, recently, by performing cellular fractionation followed by western blotting, we have shown that MD 2 is localized mainly to the cytoplasm, which goes against previous literature that MD 2 is an extracellular protein or is intracellularly associated with TLR 4. Therefore, in order to understand the potential role of MD 2 in SCFA stimulation of TLR 4, we would like to further investigate the localization of TLR 4 and MD 2 after treatment with acetate.

Administration of JAK2 Chemical Inhibitor AG490 Prevents Formation of the Immunoproteasome in HepG2 Cells

Lindsay Davison and Amanda Williams, Biology

In order to maintain a finely tuned immune system, the body requires degradation of these antigens or damaged proteins into peptides, which can then be loaded onto MHC I receptors. This degradation process is performed by a protease complex referred to as a proteasome. However, in the case of viral infections, changes to the structure of the proteasome take place, resulting in the formation of an immunoproteasome. In order to change from the constitutive proteasome to the immunoproteasome the catalytic subunits MECL1, LMP2, and LMP7 must be recruited and used to replace the catalytic subunits that characterize the constitutive proteasome. Recruitment of the immunoproteasome subunits occurs in the presence of Interferon gamma (IFN- γ), Tumor Necrosis Factor alpha (TNF- α), or other proinflammatory cytokines associated with the immune response. Our lab believes that the JAK2 receptor, when bound by either IFN- γ or TNF- α , results in the activation of transcription factors STAT1 and STAT3, which dimerize and move to the nucleus, resulting transcription of the critical catalytic immunoproteasome subunits. Many viruses, such as Hepatitis C, are able to manipulate the immune system by producing proteins that interfere with the production of immunoproteasomes, one example being that of the Hepatitis Core Viral protein (HCV), which previous literature suggests prevents the recruitment of the critical subunits. Our lab hopes to mimic the activities of these viruses by blocking the JAK2 receptor with a chemical inhibitor, AG490, to prove the link between the JAK/STAT pathway and the formation of the immunoproteasome.

Leadership Perceptions and School Climate

Nicole Pierce, Jean Kleine-Kracht, and Keith Nikolaus, College of Education

The purpose of this study is to assess the usage of transformational leadership behaviors displayed by principals in a specified district. The data will provide insights into where the principals align in relation to the Tennessee Transformational Leadership Association (TTLA) framework. To ascertain the effectiveness of these leadership behaviors, school climate will also be assessed. This will provide further acumen, enhance the data, and enrich the narrative of this study. Ultimately, as these two items are correlated, potential and positive professional development opportunities could be discerned for these leaders. Quantitative and qualitative statistical methods will be utilized, including t-tests to determine if there is a difference in teachers' and principals' perceptions of leadership practices and Pearson-product moment correlation coefficient analyses to determine the relationship between leadership behaviors and school climate factors. The results of this study could benefit future decision-making for the participating district and inform other educational organizations about the connection between transformational leadership and school climate.

Accountable Talk Increases English Language Learners' Guided Reading Level

Haley Henson and Reva Chatman-Buckley, College of Education

The purpose of this study is to find an effective strategy to use during reading instruction with ELLs to increase their guided reading levels. English Language Learners in most schools today are falling behind in academic subjects because they are not completely fluent in the English Language (reading, writing, listening, speaking). The study represents a quantitative approach and is quasi-experimental. During a four-week period, three second grade EL students in a regular education classroom of 21 students use accountable talk as a strategy to increase their reading level; while three second grade EL students in a regular education classroom of 20 students do not implement the strategy. The researcher hypothesizes that the English Language learners that use accountable talk during reading instruction will increase their guided reading level by at least one level within a four-week period of implementation. The findings are still unknown as the research is currently still in progress.

Implementation of Ambulatory Care Pharmacy Services Within a Multispecialty Medical Group

Haley Willett and Ben Gross, Pharmacy Practice

Collaborative pharmacy practice agreements (CPPA's) allow licensed pharmacists to work jointly with licensed physicians in the comprehensive management of patients in the state of Tennessee. The purpose of this project is to utilize a CPPA to establish ambulatory care pharmacy services within a multispecialty medical group, document interventions made, and estimate cost savings based on those interventions. Two licensed pharmacists will evaluate existing physician services and the patient population to identify areas of opportunity for pharmacist intervention. As needs are identified, patients will be referred to a pharmacist for services including, but not limited to, patient education, medication reconciliation, and comprehensive medication management (CMM). As pharmacy services are provided to the extent outlined in the CPPA, the pharmacist will document completed services within both the electronic medical record (EMR) and a mobile application designed to capture intervention data. An estimated cost savings will be attached to interventions made. Upon pharmacy integration, patients were identified for pharmacy referral in one of two ways. First, hospital follow-up patients were identified using the provider schedule and were scheduled to meet with a pharmacist thirty minutes before their original appointment time. Second, pharmacists were available for same-day consults and patient education as deemed necessary by the provider. It is expected that as pharmacy services offered continue to expand, cost savings and opportunities for additional revenue will also increase.

Clinician Perceptions of External Medication History Data in the Emergency Department Following New Electronic Health Record Implementation

Mimi Baker and Elizabeth Breeden, Pharmacy Practice

Medication reconciliation is a key, interdisciplinary process within the care continuum. A Best Possible Medication History must be obtained to accurately perform the medication reconciliation process. However, errors of omission and inaccurate medication data are common when collecting a Best Possible Medication History. Opportunities exist to leverage prescription claims and fill history data through health information exchange within electronic health records (EHR). These functionalities to access external medication history data will be available to healthcare professionals at Vanderbilt University Medical Center (VUMC) after implementation of a new electronic health record in November 2017. The primary objective of this study is to characterize clinician perceptions toward utilization of external medication history data available within the electronic health record. After implementation of the functionality, guided interviews will be conducted with a structured interview guide to elicit perceptions of the data from a sample of clinicians (physicians, physician assistants, nurse practitioners, nurses, pharmacists, and medication history technicians). Quantitative data regarding utilization rates will also be queried from the EHR database. Data will be collected via a research survey tool and interview audio will be recorded. An iterative coding process will be used to analyze the data. Expected results will be positive perceptions of external medication data by clinicians, as they may find the additional information useful to compose a Best Possible Medication History to complement patient interviews. However, low utilization rates are anticipated at first until clinicians become more familiar with the functionality and develop trust in the data over time.

Retrospective Analysis of Oxcarbazepine in Pregnant Females with Substance Use Disorders: Focus on Safety

Kayla Johnson and Lindsey Miller, Pharmacy Practice

Oxcarbazepine is an anticonvulsant commonly used in the treatment of pregnant patients with substance use disorders. Recent safety data regarding the use of this agent in the treatment of pregnant females with epilepsy has shown non-significant differences in major congenital malformation rates, higher full-term infant neonatal intensive care unit admission risk, and higher rates of elective or emergent cesarean sections at time of delivery. However, little information exists on the impact in patients with substance use disorders. The objectives of this study are to evaluate for any harm and rates of harm occurring due to oxcarbazepine therapy in either a pregnant female or a developing fetus plus the incidence of caesarean section and neonatal intensive care unit admission. A retrospective chart review from November 2007 to October 2017 will be conducted to screen for recorded complications and/or adverse events in eligible patients. Patients will be divided into two groups based on the presence or absence of oxcarbazepine exposure. The patients' medical record will be examined for relevant progress notes from conception until the delivery admission. In addition, the neonate's medical record will be examined for further care until time of discharge. Descriptive statistics will be utilized for baseline characteristics of each group with an estimated 100 patients in the oxcarbazepine exposure group and 200 patients in the non-oxcarbazepine group. N and % of subjects determined to experience an adverse event will be reported with the differences in adverse event rates between groups being analyzed via chi-squared and odds ratio calculations.

Evaluation of Complications Associated with Ketorolac Following Off-Pump Coronary Artery Bypass Graft Surgery

Lindsey Safley, Jakob Phann, Cassandra Benge, Jonathan Pouliot, Zac Zeger, and Abigail Burka, Pharmacy Practice

Ketorolac tromethamine is a cyclooxygenase-1 selective nonsteroidal anti-inflammatory drug that is contraindicated for the treatment of peri-operative pain in the setting of coronary artery bypass graft (CABG) surgery; however, it continues to be used at certain cardiac surgery centers. This single center, retrospective, observational analysis of 344 patients quantified the composite rate of in-hospital complications following off-pump CABG surgery in patients who did and did not receive ketorolac for post-operative pain relief at the Tennessee Valley VA hospital between the years of 2011-2016. The primary composite outcome consisted of acute kidney injury (AKI), need for blood transfusion >24 hours post-surgery, return to operating room, coronary thrombosis, stroke, gastrointestinal bleeding, and death. The cohorts were well-matched at baseline, with the exception of a lower Charlson Comorbidity Index in the group who received ketorolac. Overall, 47.9% of ketorolac patients and 57.8% of the no-ketorolac patients developed the primary outcome ($p = 0.21$). Despite a trend towards a higher rate of in-hospital complications in those who did not receive ketorolac, there was no statistically significant difference in the composite outcome or any individual component of the composite outcome between the two groups. A multivariate analysis found that ketorolac use was not an independent risk factor for the development of the primary composite outcome in patients following off-pump CABG (OR 1.49; 95% CI, [0.801 to 2.81]). Ketorolac appears to be well-tolerated following off-pump CABG in this single-center population of veterans. However, future studies with a larger population are warranted.

CYP1A2 Activity Impacts Sunitinib Reactive Metabolite Formation

Rebecca Durandis and Klarissa Jackson, Pharmaceutical Sciences

Sunitinib is a multiple-targeted tyrosine kinase inhibitor primarily used to treat renal cell carcinoma. However, hepatotoxicity is a concern with the use of sunitinib in some patients. The adverse reaction is idiosyncratic, but metabolism of the parent compound into a reactive metabolite has been suspected to play a role. Previous studies in our lab have shown that CYP1A2 and CYP3A4 are capable of converting sunitinib to a reactive quinoneimine metabolite. The purpose of this study was to determine the kinetics of sunitinib metabolite formation using individual human liver microsomes to further investigate the role of CYP1A2. Sunitinib was incubated with human liver microsomes from one donor with low CYP1A2 activity (HH741) and another with high CYP1A2 activity (HH581). Glutathione (GSH) was used to trap the quinoneimine metabolite to form a GSH adduct, which can be detected by liquid chromatography - tandem mass spectrometry. The results of kinetic experiments demonstrated that CYP1A2 has a greater ability to form the quinoneimine-GSH conjugate compared to other P450 enzymes. In addition, there was a 2.6-fold increase in the formation of the quinoneimine metabolite with microsomes that had high CYP1A2 activity (HH581) compared to those with low activity (HH741). These findings indicate that differences in the activity of CYP1A2 can affect the levels of sunitinib reactive metabolites formed, which may contribute to patient risk for hepatotoxicity. Because CYP1A enzymes are inducible by cigarette smoking, ongoing and future studies will focus on examining the impact of smoking on sunitinib metabolism.

The Effect of UV-C Irradiation of Coconut water on Amino Acid Concentration

Kevin Flatt and Matthew Vergne, Pharmaceutical Sciences

In recent years, coconut water has become a popular beverage choice because of its marketed ability of rehydration. However, coconut water must be processed, typically by thermal processes, in order for it to have a suitable shelf-life, and thermal processes may cause nutritional quality to suffer. Ultraviolet (UV-C) light technology is a non-thermal and non-chemical process to inactivate enzymes without affecting flavor and nutritional content in juices. Coconut water has a significant content of amino acids, and we sought to test the effect of UV-C light on amino acid concentrations. The concentration of essential amino acids in UV-C processed coconut water was determined by liquid chromatography mass spectrometry. The amino acids tested were histidine (His), lysine (Lys), methionine (Met), phenylalanine (Phe), threonine (Thr), tryptophan (Trp), leucine (Leu), and isoleucine (Ile). The UV fluence levels were 0 (control), 100, 200, 300, and 400 J/cm². The concentration of amino acids ranged from 1 nM (Lys) to 1288 nM (Trp). The concentration of the amino acids did not decrease with the UV treatment. The results suggest that UV treatment of coconut water does not cause a significant increase or decrease in the concentration of essential amino acids.

Detecting Hemispatial Neglect

Jen Stewart and Dale Alden, Psychology, Counseling, and Family Science

The Alden-Valk Automated Neglect Test (AVANT) was developed to be an enhanced means to more accurately detect hemispatial neglect, a neurological symptom often caused by injury to one side of the brain. Although not yet implemented for clinical testing, the instrument makes use of an application suitable for an iPad device, an innovation that is expected to generate more accurate readings because of its power to reduce human error and subjective judgment. Although paper line bisection tests and drawing tasks have been in use for some time, the new application potentially provides more detailed and reliable information. The automatic format provides for standardized delivery, scoring and data storage, and will provide neuroscience specialists with immediate, standardized feedback of neglect in clinical and research settings. Preliminary standardization data has been gathered from approximately 83 normal subjects, with mean deviations from center of each of 20 randomly placed horizontal lines using both right and left hands, and are presented for evaluation. Continued data gathering from various age cohorts will provide a foundation for comparison to clinical groups in the near future.

True Cost of Vanlife

Anna McClure and Emily Stutzman, Institute for Sustainable Practice

This exhibit will present a cargo van that I have converted into an off-grid home. The presentation will detail the process of the build, the costs of materials and the motivations behind my decision to live in this type of alternative housing. This project is the foundation of a research project entitled the True Cost of Vanlife which compares the economic costs and environmental impacts of "vanlife" to those of living in an apartment. This on-going project, along with my experiences building out and living in the van myself, will be discussed as part of my presentation. A visual aid detailing the costs of the van conversion will be displayed alongside the van itself and items of significance within the van will be labeled with descriptions explaining their function. Links to the Instagram account and blog associated with the True Cost of Vanlife project will also be displayed via QR codes, and pictures showing the progression of the build from start to finish will be displayed. This exhibit will be a reflection of my personal values and motivations as a student in the Institute for Sustainable Practice as well as a statement piece about my exploration into housing features now viewed as "necessities".

Undergraduate Students Poster Presentations

Germinating *Magnolia grandifloras* in the Lab

Kelsea Hadley and Kent Gallaher, Biology

Magnolia grandifloras are native to warm temperate climates of the USDA zones 7-9. The purpose of this experiment was to test what conditions are optimal for *Magnolia* seed germination in the lab. It is hypothesized that germination will take place after stratification in temperatures of 4C for 35 days. Seeds were collected around the campus of Lipscomb University and 330 seeds were used to test the hypothesis. Seed coat was removed and seeds were washed to remove oils. Seeds were kept in moist sand and stratified at various temperatures, either with or without ethylene hormone treatment via commercial Ethephon (3.9%). Seeds at 4C germinated at 12.66% (0.123) over the 52-day stratification period. Likewise, seeds at -19C germinated at 4.66% (0.056). Highest germination rates (50%) were observed in non- stratified seeds incubated at room temperature (21C). This data suggests that stratification actually inhibits seed germination in *Magnolia grandifloras*. Additionally, ethylene hormone treatment (via Ethephon) had no effect on seed germination. Future research might include Gibberellic acid as a possible treatment to improve seed germination in this subtropical tree species.

Impact of Traffic Noises on Birds in Warner Park

Haley Powell and John Lewis, Biology

Multiple studies suggest traffic has a negative effect on avian life, but not all studies agree on the cause. This study was conducted to see how traffic affected bird counts within Warner Park, using data from their version of the Breeding Bird Survey. We compared each stop's average species richness to the stop's distance from the road. Furthermore, 19 species' trends within the park was compared to their dominant vocal frequencies. Additionally, we compared traffic to birds whose dominant frequency was below two kilohertz, since that is where most of human noise is generated. Of those 19 birds, there was one with a dominant frequency under two kilohertz, the Yellow-billed Cuckoo. The Eastern Wood-Pewee trend within the park was also compared due to having the same preferred habitat vegetation density as the Yellow-billed Cuckoo and similar trend for their entire populations. Their trends were compared to the average of six TDOT traffic stations on roads surrounding the park, which provided a year's daily average number of cars that drove by. We found no significant correlation between a stop's species richness and its distance from the road. When comparing each species' trend in the park with their dominant song frequency, we found typically a lower dominant frequency having a negative trend and higher having a positive trend. The negative correlation between the Yellow-billed Cuckoo trend and the average traffic and no correlation between the Eastern Wood-Pewee trend indicated that traffic does influence birds with a lower dominant frequency in Warner Park.

Essential or Harmful?

Graysen McConnell, Krishna Patel, and Bonny Millimaki, Biology

For centuries, people have been using oils to treat medical issues. Unfortunately, there are many questions remaining about the safety of essential oils that need to be addressed in order to better inform consumers. We are particularly interested on the impact of essential oil exposure on developing embryos as many pregnant women are turning to this natural remedy. Lavender, in particular, is commonly used by pregnant women due to its perceived calming effects; however, there is scarce research on the effects of lavender oil on embryonic development. We are studying the effects of the Young Living Essential Oil lavender on the development of zebrafish embryos. Through research we presented in 2017, we have found that lavender oil exposure is fatal for zebrafish embryos at many concentrations. In the last year we have determined a non-lethal dose of lavender oil. Embryos exposed to a non-lethal dose of lavender oil often exhibited

developmental defects including swollen hindbrains. We next wanted to determine if these defects had any impact on behavior. To test this, we performed a startle response behavior assay and found that exposure to lavender oil results in a reduced reflex response and improper embryonic movement. This suggests that lavender oil may cause neural developmental defects. To test this hypothesis, we used the Ab-SV2 antibody to fluorescently tag the target neural tissues and look for any potential abnormality caused by lavender oil exposure. Together our data suggest that Lavender oil exposure early in embryonic development causes neural developmental abnormalities.

The Effect of Interferon Gamma on Immunoproteasome Expression Levels in HEPG2 Cells at Varying Time Points

Abigail Holt and Amanda Williams, Biology

Immunoproteasomes, which cleave endogenous antigens into peptides, allow for the presentation of these small proteins by major histocompatibility complex (MHC) class I molecules and interaction with CD8+ T-cells. Our lab, interested in the activation of immunoproteasomes through the JAK/STAT pathway, and furthermore, downstream implications, previously found that immunoproteasome subunits appear to be regulated by JAK2 signaling when treated with INF- (a cytokine ligand for the JAK receptor) in C8B4 cells. Currently, we are interested in determining the effect of Hepatitis C on the immunoproteasome in HEPG2 cells, using the cytokine to mimic the viral infection; to do so, we must first determine the timing of expression of immunoproteasome subunits when treated with the cytokine, INF-. We hypothesize that treating HEPG2 cells with INF- on a time-scale will produce a differential expression of the immunoproteasome subunits. To test this hypothesis, we treated HEPG2 cells with INF- and measured the expression of immunoproteasome subunits at 12, 24, 48, and 72 hours post-treatment through Western Blotting. These experiments will provide more insight into the JAK/STAT pathway influence upon immunoproteasome expression and allow us to continue study into downstream intracellular targets in regards to Hepatitis C.

The localization of the TLR 4/MD 2 complex in colonic epithelial cells after stimulation with short-chain fatty acids

Katherine E. Ankenbauer, Kacey J. Kemper, and Jon H. Lowrance, Biology

The human intestinal microbiota consists of a diverse and complex array of microbes and plays a pivotal role in regulating gut homeostasis and inflammation through the production of several by-products. One of these products, short chain fatty acids (SCFAs), are produced by anaerobic bacteria in the small bowel and include acetate, butyrate, and propionate with acetate being the most common. SCFAs appear to have important roles in maintaining the epithelial barrier, regulating inflammation and can either enhance or suppress the immune response. Previous studies in our lab and others have shown that SCFAs directly modulate the activation of Toll-like receptor 4 (TLR 4), a type of pattern recognition receptor (PRR) that recognizes pathogen-associated molecular patterns such as lipopolysaccharides. Myeloid differentiation-2 (MD 2) is a TLR 4 accessory protein that is critical for LPS responsiveness. Previous studies in our lab have shown that TLR 4 is localized nearly exclusively to the membrane in normal colonic epithelial cells, suggesting that MD 2 is also localized to the membrane. However, recently, by performing cellular fractionation followed by western blotting, we have shown that MD 2 is localized mainly to the cytoplasm, which goes against previous literature that MD 2 is an extracellular protein or is intracellularly associated with TLR 4. Therefore, in order to understand the potential role of MD 2 in SCFA stimulation of TLR 4, we would like to further investigate the localization of TLR 4 and MD 2 after treatment with acetate.

TLR 4-Associated GPR41 Expression Due to SCFA Stimulation

Collin Vasseur and Jon H. Lowrance, Biology

The epithelial cells of the human digestive system play a variety of essential roles in the human metabolism. Some of these functions include absorption of nutrients and protection from antigens through immune responses. These same epithelial cells respond to the intestinal microbiota in several ways some of which may be beneficial or detrimental. Current published data indicates that short chain fatty acids (SCFAs) that are byproducts of microbial fermentation may influence colon health through specific immune pathways. One such innate immune pathway is Toll-like Receptor 4 (TLR 4). Our goal has been to determine the effects of SCFAs on TLR4 expression in association with GPR41, a receptor for SCFAs. In order to investigate this link between TLR 4 and GPR41, we have treated different type of colon cell lines with acetate, a SCFA at various time points and analyzed the protein expression levels of TRL 4 and GPR41. When comparing treated and untreated cells at a 3-hour time point, our data demonstrated a minor increase in expression of GPR41 when compared to GAPDH as a positive control protein. The expression of GPR41 in treated cells was shown to be 40% of control GAPDH expression whereas expression in untreated cells was shown to be 35%. Possibly the 3 hours' treatment is not sufficient to stimulate significant increase in expression GPR41 and longer treatment times are necessary to confirm a trend. Moreover, the trend of increased expression when treated with a SCFA is indicative of the direct relationship of TLR 4 and SCFA exposure.

EDNRB 201 Isoform in Human Breast Cancer Cells

Deidra Bedgood, Zuhaila Hired, Katherine Iglesias, Khadija Kirmani, Mirna Mina, and Rebecca Conway, Biology

The endothelin axis consists of protein ligands (ET1, ET2, or ET3) and their receptors (ETAR or ETBR) which are important in studying vascular function. The axis is found in both endothelial and epithelial cells, however the focus of this research is on the latter due to their role in cancer formation. This project analyzes the relationship between the ET3 ligand and ETBR. The protein encoded by this gene is a G protein-coupled receptor (GPCR) which activates a phosphatidylinositol-calcium second messenger system. Our methods involved transforming the Origene EDNRB 201 isoform plasmid into *E. coli* bacteria via electroporation. The plasmid was transfected into MDA-MB 231 human breast cancer cell lines. Then a calcium assay was performed to observe the downstream activation of the GPCR. Additionally, RTq-PCR analysis was performed to study the downstream effects of EDNRB 201 and its potential mRNA overexpression. This study will specifically observe the effects on genes CASP9, AKT1, and EDRBB2, which are all known to be upregulated in breast cancer cells. Furthermore, an invasion assay will be conducted and analyzed. Our expected results of the calcium assay are that ET3 will increase calcium levels as it is an activator of EDNRB. From RTq-PCR we expect to see significant differences in expression among our target genes. This data from EDNRB 201 will then be compared to data from EDNRB isoforms 202 and 204. By studying EDNRB and its various isoforms, our research will provide additional knowledge of the EDNRB receptor and its role in breast cancer cells.

Effect of Overexpressing EDNRB-202 in Breast Cancer Cells

Brandon Cunningham, Stephen Hemmerly, Andrew Wigger, Regine Lane, Natasha Jones and Beth Conway, Biology

Breast cancer is one of the most common cancers among women. Currently, the average risk of a woman in the United States developing breast cancer sometime in her life is about 12%. While the Endothelin A Receptor has been well studied and is commonly over-expressed in breast cancer, Endothelin B Receptor (EDNRB) expression and cancer is less understood. EDNRB is a G-protein coupled receptor associated with calcium release from the endoplasmic reticulum into the cytoplasm. Downstream effects of increased calcium levels have been implicated with increased cell growth and metastasis. The goal is to determine if there are any downstream effects activated when there is increased expression of the receptor and when endothelin 3, the ligand that binds EDNRB, is present. To determine if there are any significant differences between the EDNRB isoforms 201, 202, and 204 and their contributions to cancer progression, our group will analyze the effects of the lone overexpression of EDNRB-202 in MDA-MB-231 breast cancer cells. In order to accomplish this goal, we used EDNRB-202 plasmids in their original expression vectors. The breast cancer cell line MDA-MB-231, a highly aggressive, triple negative cell line, was transfected with the plasmid. RT-qPCR will be used to detect the expression of EDNRB-202 among the transfected cells and to determine if there is a difference in the 202 isoform. Additionally, invasion assays will be performed to determine if there is isoform variance in cancer cell invasion. These methods will aid in determination the role EDNRB-202 may play in breast cancer.

Endothelin B Receptor Isoform 204: An investigation into the downstream signaling effects of EDNRB upregulation in breast cancer

Carly Hedgepath, Brent Horswell, Haley Scarbrough, Malinda Brooks, Owen Glogovsky, Biology

The endothelin axis plays a key role in the function of normal tissue but has recently emerged as an advocate for tumor growth and progression in a variety of cancer types; most notably in breast cancer. The axis is comprised of the endothelin ligands ET1, ET2, and ET3 which bind to G-protein coupled endothelin receptors A and B. Endothelin receptor A is instrumental in a number of oncogenic signaling pathways. The function of endothelin receptor B (EDNRB) in cancer remains uncertain although it has been implicated in potentially propagating invasive cancer behaviors through activation of downstream cell signaling pathways. In this study, we examined the function of a particular isoform of EDNRB, 204, by transfecting MDA-MB-231 human breast cancer cells. The downstream signaling capabilities of the transfected cell line was examined using calcium assays, RT-qPCR, and in vitro invasion assays. The calcium assay provided qualitative analysis of EDNRB's involvement with the IPC signaling pathway. Preliminary data indicates that the 204 isoform has higher levels of calcium than the 201 variant; 202 was not significantly different from 204 or 201. This could suggest that isoform 204 upregulates calcium signaling; or, alternatively, 201 suppresses it. RT-qPCR will allow us to quantify the expression of downstream gene targets, while the invasion assays will provide us with the relative intensity of invasiveness that EDNRB has in human breast cancer. We predict that EDNRB will upregulate gene targets, namely MCL1, ERBB2, and CTSD, which could possibly contribute to a more aggressive phenotype in cancer.

Company Response to Data Breach Crisis: Consumer Perspectives

Shelby Woods, Zach Livengood, and Lindsay Dillingham, Business

This research examines the impact of corporate response to data breach crises on customer retention. A moderated focus group and survey were used to explore three research questions. Thematic qualitative analysis and mean comparisons of survey responses demonstrate two key findings. Selecting the appropriate form of compensation (gift card, cash, coupon, or free shipping) and form of notification of the breach (notified by company, credit card company, social media, or news) are vital in retaining customers. Preliminary results also indicate that consumers may vary in their willingness to return to the physical store, website shopping, and mobile app purchases following a data breach crisis. Implications for handling of corporate crises and suggestions for future research are presented.

Surface Free Energy Characterization of Biofilm Resistant Monomers

Verena Ghebranious and Brian Cavitt, Chemistry and Biochemistry

Biofilms, found in various surfaces, are the habitat of 95% of the earth's bacteria and successfully protect bacteria from many antibiotics. Biofilms cycle in several steps: 1) primary colonization, 2) quorum sensing, 3) glycocalyx formation, 4) secondary colonization and 5) release and dispersal of free bacteria. Primary colonization depends on the complex interaction of the binding adhesins to the substrate. Coating surfaces with a biofilm resistant substrate would provide a means by which bacterial adhesion via primary colonization could be hindered. Previous research indicates that formulations incorporating halogenated phenyl acrylate derivatives produce effective biofilm resistant substrates. Analyzing the surface free energy of the homopolymers of the halogenated phenyl acrylate derivatives allows for a method of which a surface is predicted to be more effective in inhibiting biofilm formation. Upon measuring the contact angles of biofilm resistant monomers using the sessile drop method, the surface free energy was determined using the Owens-Wendt and van Oss-Chaudhury-Good equations calculated via the matrix method. Results indicate that effective biofilm resistant coatings were all 1,4-disubstituted halogenated phenyl acrylate homopolymers with a low surface free energy ($\gamma_s < 30 \text{ mJ/m}^2$) and also formed very smooth coatings. Therefore, primary colonization may be inhibited by modifying the surface free energy of the substrate with a smooth coating.

Hazardous Waste Leaching Analysis on Electronic Waste Materials

Rachel Brooks and Linda Phipps, Chemistry and Biochemistry

Due to frequent updates and innovations in electronics, consumers throw away their old electronic devices. Lightbulbs, televisions, computers, computer monitors, and cell phones often end up in municipal landfills. These electronic devices contain materials and chemicals that could be harmful to the environment. As the prevalence of electronics in landfills increases, the concern for harmful waste materials entering the environment increases as well. Electronic device waste, termed e-waste, has been the focus of environmental leaching tests in the past couple of decades. The U.S. Environmental Protection Agency's Toxic Characteristic Leaching Procedure (TCLP) method can help determine the amount of harmful materials that could leach from e-waste into the landfill and environment. Using the TCLP method, materials from various electronic materials was leached, and the leachates were analyzed for inorganic metals using Inductively Coupled Plasma - Optical Emission. Five different types of lightbulbs, cathode ray tube (CRT) glass from a television and a computer, a computer screen, a television screen, and an iPhone screen were tested. The data was compared to the acceptable levels of inorganic materials in the environment as set by the U.S. EPA to determine if harmful materials could leach from these glass samples into municipal landfills and the surrounding environment.

The Microwave Synthesis of Phenylalanine: A two-step Synthesis in the Organic Teaching Laboratory Using Methyl Ethyl Ketone as Solvent

Elizabeth Behrens, Amy Nguyen, and Kent Clinger, Chemistry and Biochemistry

A modified malonic ester synthesis may be used to synthesize phenylalanine from diethylacetamidmalonate (AAM). Malonic ester syntheses are organic chemical reactions in which an ester of malonic acid is alkylated at the alpha carbon, adjacent to both carbonyl groups, and then is converted into a substituted acetic acid. The synthesis of phenylalanine illustrates the advantages of modified malonic esters in organic synthesis. However, the synthesis of amino acids has often been conducted in absolute ethanol and sodium ethoxide. Sodium ethoxide is commonly generated in situ by the addition of sodium metal to absolute ethanol. This presents a couple of difficulties: 1) metallic sodium reacts rapidly with water to produce hydrogen which can create an explosive condition; and 2) absolute ethanol is expensive and difficult to maintain in the absolute state. Therefore, our laboratory has sought to find safer alternatives for the base and the solvent. Following the work of Deiters and co-workers, we have performed malonic ester condensations using cesium carbonate as the base in various solvents. PEG 400, acetone, and butanone (MEK) have all been found to yield product suitable for hydrolysis into phenylalanine in the undergraduate organic chemistry laboratory. A microwave assisted acid hydrolysis using dilute acid is currently being developed to remove all the malonate protecting groups and decarboxylate one of the carboxyl groups.

Testing Explosion Residues in an Undergraduate, Non-Majors Laboratory Experiment

Grace Rutledge and Linda Phipps, Chemistry and Biochemistry

After a bomb explosion, various pieces of the device are left behind including trace amounts of residue which contains the chemical make-up of the explosive mixture used in the bomb. Depending on the type of explosive used, such as homemade bombs with black powder or improvised bombs made up of publicly accessible chemicals, the mixture composition can differ. In this experiment, a forensic approach was utilized to determine the chemical composition of the mixture in the residue. Residues were collected and concentrated via an acetone extraction. Then different reagents were added to the extractions with colorimetric spot tests recorded. Based on the colors observed, the chemical composition of the explosive mixture can generally be identified, and types of explosives can be eliminated as potential devices used in the crime. This information will be used for undergraduate students to gain experience in the lab by collecting residue and analyzing the reagent reactions to conclude what explosive was potentially used at a crime scene.

NashBot

Bryce Wieman, Matt Roland, Dallas Barlettano, and Timothy Wallace, Computing and Technology

The idea behind this project is to create a fully functional Chatbot that utilizes the Microsoft Bot Framework, Node.js, LUIS, and other APIs for things like locational services. This Chatbot, named NashBot, will allow users to interact with the bot that will have complete knowledge of Nashville and all the things this city has to offer with the added benefit of having a local's perspective. In order to determine the bots usability, likability, and overall effectiveness, the team will create a survey that a sample group will fill out after using the bot for a predetermined period of time. The team will then analyze the results of this survey to update or rework any part of the bot where needed. Once completed, this bot will be able to give users directions, suggestions, advice, and more using friendly adaptive dialogue.

Applications of RTL-SDR Technology to Aid in Cell Phone Detection

Jesse Lippincott and Kenneth Mayer, Computing and Technology

One of the largest problems plaguing today's prison system, especially in Tennessee, is contraband cell phones. Prisoners are easily able to smuggle cell phones in and use them to maintain control of illegal operations from within the confines of a prison. Due to their small size and extremely sparing use, they are nearly impossible to detect. However, while the phones are in use, they give off a signal that includes their unique IMSI identifier. While there are technologies in existence that can detect IMSI transmissions and GSM data, the cost is significantly higher than what the underfunded public prisons can afford, and thus there are no readily available solutions. In this paper, we explore the potential of using an RTL-SDR radio tuner installed on a Raspberry Pi to detect low-frequency GSM data and IMSI transmissions. These devices are capable of identifying cell phone traffic within a 30-meter radius, and with enough devices installed in a prison, administrators could identify where cell phones are being used, either via triangulation or a heatmap model of which devices have detected phones. Implemented correctly, this would provide a relatively low-cost solution to alleviate, or even eliminate, the prison system's problem of contraband cell phones.

NCAA Soccer games using a Similarity Metric and Genetic Algorithm

Jonathan Hughes and Arisoa Randrianasolo, Computing and Technology

Coaches and fans are always interested in analyzing game statistics in order to predict the outcome of future games. In this report, we summarize our approach in predicting games in a tournament using limited statistics. We restrict the data to be used in the predictions to only the current data from the tournament of interest. With this setting, we believe that the approach will work in any tournaments where statistics are available and where the teams do not know much about each other. Our approach is built around the idea of creating an ideal team, a team with a perfect statistics. Given two teams that are to play in a head to head game, we predict that the team that is the closest to the ideal team will be the one that will win. A simple similarity metric, such as Euclidean, Manhattan, or Cosine distance, suffices to calculate the distance between a team and the ideal team. A human agent creates the initial ideal team, which can be erroneous. A genetic algorithm is used to optimize the ideal vector so that the accuracy of the predictions can be improved. We tested this approach on the 2017 NCAA soccer playoffs. We compared our predictions with the predictions based on the teams' rankings. With limited data and sometimes delayed statistics from the NCAA website, our approach performed very close to the predictions based on rankings. In some rounds, it was better than the rankings.

GSTAL Virtual Machine

Bethany Cadena and Bryan Crawley, Computing and Technology

Georgetown Stack Assembly Language (GSTAL) is a modification of the STAL language made by Gerald Wildenberg around 1990. It is a byte-code language with stack-oriented Harvard architecture. GSTAL contains 46 instructions used in creating programs. Python, a programming language, was chosen for this project because it's easily understandable by the chosen audience: undergraduates. Additionally, Python's list data structure works well with GSTAL's stack-oriented memory architecture. This project entails building a GSTAL interpreter with debugging capabilities designed for use with an undergraduate compiler course. There are three components to this project: syntax analysis, the GSTAL virtual machine, and the debugging capabilities. For this presentation, we are focused on the GSTAL virtual machine, which executes the GSTAL program.

Application of Deep Learning to Batch Effect Correction in RNA Sequencing Data

Thais Minet and Qingguo Wang, Computing and Technology

Whole transcriptome sequencing (RNA-seq) data is an important tool for understanding the genetic mechanisms underlying human diseases. Fueled by an urgent need to counter threats of genetic diseases such as cancer, a multitude of large-scale studies, e.g. The Cancer Genome Atlas (TCGA) and the Genotype Tissue Expression (GTEx) project, have generated an unprecedented volume of RNA-seq data. However, a limiting factor in the use of these data is the batch effects inherent in the data, which prevent comparative analysis of samples from disparate sources. In this study, we apply a deep learning method to correct batch effects in RNA-seq expression data. Using the data from two of the largest studies in the field, TCGA and GTEx, we train a residual neural network to minimize the maximum mean discrepancy of two multivariate distributions and adapt it for data that has multiple sources of batch effects. We apply this method and its adaptation to both single tissue and multiple tissue data sets and compare its effectiveness with other methods. Our results show that a residual neural network minimizing maximum mean discrepancy can effectively remove certain study-specific batch effects, thus aiding in cross-study analysis of RNA-Seq expression data.

Modern Convolutional Neural Network Approaches

Addison Bean and Eddy Borera, Computing and Technology

Image recognition is one of the most widely used applications of deep learning. It has a profound impact on many areas of life, from captchas and online security to self-driving cars. Many teams have sought to create networks with the least errors for various image recognition tasks, each having their own strengths. This presentation seeks to examine what successful networks have in common. This includes depth of the network, training epochs, training dataset size. It will also show why certain approaches work better or worse under various conditions, such as image size, time constraints, amount of training data available, among others.

Lipscomb North Campus Expansion

Caroline Davis, Lily Moritz, Taylor Sanders, Greg VanMaaren, and Chris Gwaltney, Civil Engineering

Lipscomb University continues to grow its undergraduate and graduate programs every year and with that growth the campus must grow alongside it. A group of senior Civil Engineering students requested to provide the civil site design services for an expansion on the north side of campus. The northwest corner of campus is next in line to receive a major expansion in a series of improvements made to the university within the next ten years. Multiple academic buildings, a parking garage, and ample green space will be included in this expansion. After approval, the Lipscomb Senior Design team proposed to analyze and design the site to meet Lipscomb University and Metro Nashville Regulations, while still creating a functional and innovative site design. The group worked with technical advisers, Barge Design Solutions, throughout the project to provide experience working on Lipscomb's campus. The final deliverables will include: Existing conditions, preliminary site layout, grading and drainage plans, erosion control plans, and water quality and quality calculations, and pavement design.

Steel Bridge Senior Design Project

Ruth Steele, Vidal Odigie, Luis Vargas, Matthew Terry, and Mark McDonald, Civil Engineering

The Student Steel Bridge Competition, held by the American Society of Civil Engineers (ASCE) and the American Institute of Steel Construction (AISC), is an annual civil engineering competition intended to provide students a student-driven project experience from conception and design through fabrication and erection, culminating in a steel structure. The competition is also intended to increase awareness of engineering issues such as spatial constraints, material properties, strength, fabrication processes, safety, esthetics, project management, and cost. At the conference, each team's final product is scored based on the following 7 categories: Display, Construction Speed, Lightness, Stiffness, Construction Economy, Structural Efficiency, and an Overall score. The Lipscomb Steel Bridge team this year consisted of four Civil Engineering Seniors that lead the design and fabrication of the bridge and seven understudies that participated in the fabrication of the bridge and the competition. The design process consisted of looking at design alternatives from past competitions to select a bridge geometry. Once the bridge geometry was chosen, the structure was analyzed to ensure a strong yet light bridge. Using concepts from engineering classes such as structural analysis and structural steel design, the team determined the steel size needed, the theoretical deflection of the bridge, and the strength of the individual connections. The design was then fabricated by the student team using Lipscomb's machine shop, making minor adjustments to the design as the students transformed their theoretical design to a physical bridge. The students tested their bridge at the regional Steel Bridge Competition.

IEEE Robotics

Cailey Cline, Caleb Bergthold, Adam Neal, Riley Northway, Reid Weber, and Greg Nordstrom, Electrical Engineering

The ever-growing field of robotics touches many different areas of the human experience. Manufacturing robots make automobile production more efficient, surgical robots dramatically reduce patient recovery time, and now, at the IEEE Region 3 Student Robotics Competition, pirate robots recover lost treasure from forgotten islands. At their annual conference, IEEE Region 3 hosts a Student Robotics Competition in which student teams design and fabricate autonomous robots to compete in a robotic game. To continue the groundbreaking efforts of the 2017 Lipscomb IEEE Robotics team, a multi-disciplinary senior design team has again been formed to lead the invention of a robot for this competition in late April. Robots in this year's pirate-themed game must decode an infrared treasure map, navigate a steep ramp between the pirate ship and island, and retrieve a treasure chest, among other tasks. By the 2018 Student Scholars Symposium, construction of the robot will be completed, and full-system testing will be underway. The primary goals of this project are to promote Lipscomb University's Engineering College by placing in the top 25% of competitors and to facilitate a positive design environment in which engineering students may practically apply their academic knowledge in the creation of a tangible product.

Bison Ballistics Student Launch Project

Caleb Davenport, Jeffrey Gage, Austin Brown, Caleb Stubbs, Ryan Seal, and Joseph Tipton, Mechanical Engineering

Every year NASA holds a student launch competition for colleges around the country, and for the first year one of Lipscomb University's senior engineering design teams will be competing in the launch. The task for the team is to design a rocket that reaches apogee (maximum altitude) as close to a mile high as possible. In addition, the rocket must safely land using a two-parachute system; a drogue parachute released at apogee, and a main parachute released at an altitude around 700 ft. before landing. Furthermore, the rocket must contain a payload that performs an experiment while in the air. The experiment chosen to be performed by Lipscomb's rocket team, Bison Ballistics, is to identify and differentiate between targets on the ground. The system will use image processing software to distinguish between three tarps of different color on the ground of the launch site.

Lipscomb Motorsports 2017-2018

Zach Potts, Eric D'Ambro, Lucas Bromenschenkel, Connor Goodwin, Austin Tabulog, and Fort Gwinn, Mechanical Engineering

Each year, the Society of Automotive Engineers (SAE) has a competition for engineering students. The competition, Baja, consists of designing, constructing, and racing a single seat off road vehicle. There are many real engineering challenges, as well as a sales and cost presentation, involved in the competition. For the past 10 years, Lipscomb Motorsports has completed; building a totally new vehicle every other year. This year, the 2017-2018 Lipscomb Motorsports team has the task of improving last year's design in order to place higher in competition events. The team started with a preliminary testing phase in order to gain a baseline for the vehicle before changes were made. Based on these results, new designs were synthesized and chosen for the updated vehicle. The main area that the team hopes to see improvement is in the suspension and maneuverability of the vehicle. The entire front section of the vehicle has been revised to allow for increased travel in the suspension arms, as well as better steering and cornering. After manufacturing is complete, the vehicle will be tested again in order to see if the changes have had a positive effect on the performance. These results will be quantified and presented for attendees to the Symposium.

Installation and Testing of a Trane Water Source Heat Pump for a Lipscomb Engineering Lab

McKenzie Lawry and Kirsten Dodson, Mechanical Engineering

The Raymond B. Jones College of Engineering at Lipscomb University is currently building a relationship with Trane in Nashville, TN. The first project completed through this partnership was the installation of a one-ton water source heat pump created by Trane. Trane employed a current Lipscomb engineering student for a summer internship with the specific purpose of being involved in this project. Trane had a vision to install the water source heat pump to be a stand-alone unit to be utilized as a testing device for engineering students in thermal-fluids courses. The unit has seventeen different types of sensors for a total of thirty-three covering pressure, temperature, flow rate, and humidity measurements in air, water, and refrigerant. The sensors installed allow students to carry out experiments that incorporate junior and senior-level mechanical engineering courses such as Thermodynamics, Fluid Mechanics, and Design of Thermal-Fluids Systems. The one-ton water source heat pump will be used in these classes to conduct experiments that expose the engineering students to more real-life situations while incorporating the stand-alone unit into the building structure. In addition to this project, Trane has made many of the mechanical engineering systems in the Fields Engineering Center available for viewing, recording, and testing including graphical user interfaces. As projects are completed, Trane and the college expect to utilize the various learning tools for educational research by examining student experiences and learning outcomes with respect to ABET criteria.

Village of Hope Sanitation System

McKenzie Lawry, Samuel Webb, Joe Kerridge, Bryant Loesch, Carson Chaffin, and John Hutson, Engineering

In May of 2018, The Peugeot Center will be implementing a wastewater sanitation system for the Village of Hope, located in Accra, Ghana. For a senior design project, The Peugeot Center has asked our team to redesign the diffuser used to disperse the effluent in the system, with the goal of optimizing the area to volume ratio, while also reducing the head required of the diffuser. Additionally, a monitoring system will be installed that will monitor key variables of the system such as ammonia concentration, rainfall, flow rate, and pump run time. This information will be transmitted to a data collection website which allows the Peugeot Center to view results and system status in real time. Not only is this iteration intended to increase system performance, but collected data will shape future design decisions, resulting in more efficient follow-on systems. Our team has worked this past year to test the performance of the current effluent diffuser as well as alternative solutions. To record and transmit system performance and environmental conditions, a flexible and extensible architecture using two separate microprocessors (an Arduino Feather and a Raspberry Pi) has been implemented. This configuration allows for the addition of extra measurement sensors as needed by the customer in future system iterations. Currently completed work will improve the efficiency of the current sanitation system by approximately 50% while collecting information that will lead to future improvements.

Difference in Peak Power Output and Mean Power Output Between Female Cross-Country Runners (Endurance Athletes) and Female Softball Players (Power Athletes)

Abby Fenichel, Jake Poyner, and Ruth Henry, Kinesiology and Nutrition

Differences between endurance athletes and power athletes is widely understood and researched. The Wingate anaerobic test (WAnT) is recognized as a test for anaerobic power. It is a 30 second maximal effort cycling test and gives peak power output, mean power output, and percent power drop values for the duration of the test. Anaerobic power can often be used to distinguish endurance athletes from power athletes. The purpose of this study is to determine the difference in power output values between female cross-country runners (endurance athletes) and female softball players (power athletes). Ten female cross-country runners (ages 18-22) and ten female softball players (ages 18-22) volunteered to participate. Participants completed a 5-minute bike warm-up followed by a 5-second trial of the WAnT protocol. After taking 2 minutes to recover from the trial, they completed the 30-second WAnT protocol followed by a 5-minute cooldown. An independent T-test was used to determine significant differences between peak power output and mean power output between the two groups. There were significant differences in peak power ($p=0.0001$), mean power ($p=0.0063$), and percent power drop ($p=0.0003$) between the two groups. The power athletes had higher peak power outputs and mean power outputs, while the endurance athletes had lower percent power drops. Significant differences in power output values between endurance athletes and power athletes on the WAnT suggest sport-specific training has an effect on anaerobic power/capacity and performance on the WAnT can distinguish between types of athletes.

Impact of Fructose on Mouse and Human Stellate Cell Activation and Proliferation

Kallan Hoover and Autumn Marshall, Kinesiology and Nutrition

Nonalcoholic fatty liver disease (NAFLD) entails a spectrum of pathologies that range from hepatic steatosis to nonalcoholic steatohepatitis (NASH). NAFLD can ultimately progress to irreversible cirrhosis of the liver or hepatocellular carcinoma. Over the years, correlations have been drawn suggesting high fructose consumption is a major contributor to the increase in NAFLD. The activation of hepatic stellate cells (HSCs) is a significant event in the development of NASH and cirrhosis. HSCs are responsible for collagen deposits in the liver. However, it remains unknown how these cells respond to high concentrations of fructose. Our lab has previously shown that high concentrations of sugar in media induce activation of mouse primary HSCs. Based on these findings, we hypothesized that high fructose concentrations and fructose in combination with glucose increase HSC activation and proliferation. To test this hypothesis, we isolated primary HSCs from mice and cultured the cells with 5mM glucose, 35mM glucose, 35mM fructose, and 35mM glucose and fructose concentrations for 6 days. The cells were then analyzed by immunofluorescence, measuring the protein expression of a fibrotic intermediate filament protein which is expressed in activated HSCs, alpha smooth muscle actin (a-SMA), and ki67 as an indicator of cell proliferation. The number of activated HSCs were quantified using ImageXpress. In addition, we explored the gene expression of fibrotic markers in LX-1 cells, a human HSC cell line, cultured in the absence and presence of fructose using real-time polymerase chain reaction.

"Saturday Night Live" - Statistical Analysis

John Ayala, Megan Torp-Pederson, Alli Brown, and Katherine Link, Mathematics

Saturday Night Live (SNL) is a comedy late-night show that first aired in October 11, 1975. As other comedy television shows, SNL uses contemporary social issues to whether create awareness or simply make fun of them. The team was in charge of analyzing the sketches of season thirty-five of the show SNL (which were aired during the first presidential year of president Barack Obama) and classified them in four distinct categories; three social issues (gender, cultural, and political) and a fourth category for the sketches that are not related to any of the topics previously mentioned. By using the time that each episode invested on each topic and through statistical procedures, such as the chi-square distribution; it is possible to determine the likelihood that a specific topic would be used on future episodes or even other shows. Additionally, the team analyzed episodes from season forty-three (which were performed during the first presidential year of Donald Trump) to compare the results obtained from the first sample group. Both seasons were chosen because it was believed that they would show equivalent results due to be performed during similar events (first presidential year).

What is the Risk of Autism in Children who Receive the MMR Vaccine Compared to Children who do not Receive the MMR Vaccine?

Abigail McCormick, Jessica Guirgis, Jaala Smith, Skylar Victory, and Jennifer Weber, Nursing

Autism spectrum disorder (ASD) is a disorder that effects many neurodevelopmental factors such as social interaction, communication skills, and repetitive behaviors. This causes lifelong difficulties in developing independence into adulthood. Because the etiology of ASD is still largely unknown, there has been a growing skepticism among parents that the measles-mumps-rubella (MMR) vaccine could increase the risk of further regressing or developing ASD. This view that vaccines and ASD are related dates all the way back to the controversial 1999 Wakefield study claiming a link between the two. Research data was analyzed to determine if there was a correlation between the prevalence of MMR vaccination and ASD diagnoses. Research was conducted on CINAHL using keywords such as "autism", and "MMR risks and benefits". After reviewing and comparing the literature, it was determined that there is no significant evidence of an association between ASD onset and the MMR vaccine. In addition, it was found that there

was no significant change in ASD regression in vaccinated versus non vaccinated children. Recommendations for further research include conducting studies with a larger sample, as well as studies focusing on an ASD correlation with additional vaccines. Additionally, there is a need for continued study of the biological makeup of the MMR vaccine in order to prevent further patient complications.

Does the Education of Concussions in Athletes Affect the Self-Reporting of Concussive Symptoms?

Elsy Felix, Katriel Griesen, Mikaela K. Lewman, Rachael K. Sarrett, and Jennifer Weber, Nursing

There are approximately 1.6 to 3.8 million concussions each year in the United States related to sport participation. However, only 40 percent of concussions were reported to a healthcare professional or coach. The risk for underreporting concussive symptoms can lead to severe health consequences like compounded neuropathophysiological impairment and chronic traumatic encephalopathy. There is an assumption in current research that increasing athletes' knowledge of concussive symptoms and consequences will result in an increase in concussion reporting. There is little research on this relationship. The online resources Academic OneFile, EBSCO Host, and ScienceDirect were used to appraise original research to examine if the education of concussions in athletes affects the self-reporting of concussive symptoms. The keywords searched were "sports concussion protocols," "concussive symptom underreporting," and "traumatic brain injury laws." The results were limited by peer-reviewed, full texts from the years 2008 to 2018. Synthesis of current research revealed that athletes reported fewer symptoms to their athletic trainers compared to symptoms reported to researchers in a confidential setting. There was no difference in self-reported concussive symptoms between cleared and non-cleared athletes. Athletes were able to list most concussion symptoms, including long-term consequences. However, when athletes were given scenarios including concussive symptoms, no group of athletes stated they would stop playing. There is a cognitive dissonance between athletes' concussion knowledge and their reporting behaviors. More research is needed on effective behavior modification in concussive symptom reporting.

What is the Effect of Essential Oils on the Amount of Pain Medication Consumed by Hospitalized Patients, Compared to a Patient not Using Essential Oils?

Carley Gilson, Shannon Guthrie, Brittany Petry, Sydney Watson, and Jennifer Weber, Nursing

Our society is full of "trendy" topics, including the now popular phenomena of using essential oils to treat ailments such as an everyday headache. But, can an oil really work to relieve pain? A literature review was performed to investigate the impact on the need for pharmacological interventions when the patient is also using essential oils to treat pain. Using the research database, CINAHL, evidence was gathered using the keywords "essential oils," "pain," "pain management," "hospitalized patient," and "in-patient." The patients in the selected studies were being treated for different illnesses and pain in many different hospital settings. The settings ranged from postoperative, hematology, labor and delivery, as well as critical and emergency care. Studies reflected that hospitalized patients who were administered essential oils alongside analgesics reported a decrease in pain. Therefore, these patients required a lesser dosage of analgesic compared to those who did not have adjunct essential oils or were given a placebo oil. Although the side effects of using essential oils consist of skin irritation and inflammation, allergic reaction, and sun sensitivity, essential oils have fewer side effects than conventional pharmacological treatments. In conclusion, the results of the studies showed that the use of essential oils reduced the quantity of analgesic needed, as well as increased patients' satisfaction with care. The recommendation as a result of the study findings is to continue using essential oils for the treatment of pain in the hospital setting.

What is the Impact of Skin-to-Skin Contact Between Mothers and Babies Within the First Year of Life on Bonding, Trust, Emotional Stability, and Post-Partum Depression Compared to Mothers and Babies who do not use Skin-to-Skin Contact?

Sarah Knox, Hannah Martin, Tania Romero, Emily Trovillion, and Jennifer Weber, Nursing

Skin to skin contact between mothers and babies after birth is essential for the baby's shocking transition from the womb into the world. From the mother's warm, cozy belly to the big, loud world, the change of scenery can be overwhelming and may adversely affect the infant's well-being. In this literature review, research findings, from original studies that evaluate the impact of skin to skin contact on infants within the first year of life, are analyzed. Skin to skin contact is a therapeutic technique used by the mother and infant soon after birth to achieve several benefits. In order for it to be considered skin to skin contact, there must not be any barriers between the mother's skin and the baby's skin including, but not limited to, clothing, sheets, and blankets. Original research articles were examined from the CINAHL Complete database to research the advantages associated with the skin to skin contact. To narrow our results, keywords such as "skin to skin contact," "infants," "attachment," and "relationship" were used. The results were also limited to studies performed from 2008 to 2018. After appraising these studies, it was concluded that skin to skin contact improves bonding between mothers and babies, reduces the baby's stress, and promotes breastfeeding within the first hour of life. Therefore, based on these findings, skin to skin contact is essential for infants and should be implemented in every hospital.

What is the Effect of a Vegan Diet on the Development of a Child Conception through Age 6 as Compared to an Omnivorous Diet?

Madeline Gardner, Mary Michael Lillicrap, Ashton Martin, Forrest Sentell, and Jennifer Weber, Nursing

The vegan diet has had an increase in popularity during the last several years; with its rise in popularity, it is important to take a look at how this diet affects the neurological and physical development of children from conception to age six. A literature review was conducted to evaluate research in order to determine how a diet lacking animal meat and products affects the neurological and physical development of a child. The research database CINAHL Complete was used to research the effects of a vegan diet on children. Chosen keywords used to search research articles in CINAHL Complete included: "vegan diet and development", "soy-based formula", "preschool children and vegan", "children and vegan diet", and "vegan diet and pregnancy". After synthesizing current research, without supplementation and meticulous planning to ensure a variety of nutrients are consumed, a vegan diet can have detrimental effects including neurological deficits and deficiencies in vitamin B6 and B12, calcium, iron, and incomplete protein count. However, with appropriate supplementation and meticulous planning of a vegan diet in children up to age six, there is little difference in neurological and physical development between a vegan and an omnivorous diet. At this time, more research is needed to determine the long-term effects of a vegan diet on early childhood development.

What is the Effectiveness of Essential Oils on Sleep as Compared to Traditional Pharmacological Methods, such as Melatonin, in the Elderly Population?

Alyssa Breedlove, Rabab Jambi, Kelsey Nussbaumer, Justis Wilkins, and Mary Koziura, Nursing

Sleep is one of the most essential aspects to our overall health, yet elderly population seem to obtain the least amount. This literature review will discuss the effectiveness of aromatherapy as an intervention for insomnia in the elderly population compared to pharmacological methods such as Melatonin. Insomnia is often seen as a comorbidity to physiological and psychological diseases that present during the aging process, however, insomnia itself is not considered a normal process of aging. Older adults that experience insomnia are more likely to develop memory disorders, depression, a decreased quality of life, a higher risk for falls, and other physiological impairments. To determine the effectiveness of aromatherapy and melatonin as an aid for insomnia, research was derived from online databases CINAHL and PubMed

Central (PMC). After critical appraisal of each study, it was determined that both melatonin and essential oils have a positive impact on insomnia in the elderly, however, they differ in mechanism of action and risk factors associated with each. In conclusion, a recommendation for further research would be to exclusively perform an experimental study directly comparing melatonin with aromatherapy as a sleep aid in the geriatric population.

Prenatal Cocaine Exposure: Effects on Childhood Development

Jamie Evans, Jordan Faulkner, Megan Jones, Savannah Roberts-Louria, and Jennifer Weber, Nursing

It is estimated that “up to 1 million infants are exposed in utero to licit and/or illicit drugs each year”. Due to this growing problem, the evaluation of whether children who have been exposed to cocaine in utero are at an increased risk for delays, and/or disabilities, in their cognitive, social, and behavioral development compared with children without prenatal cocaine exposure (PCE) during childhood through adolescents. Online databases CINAHL and Google Scholar were utilized using key words “cocaine”, “prenatal exposure”, and “development” to locate primary research articles for this literature review. Through synthesis of current literature, it was determined that PCE had implications on internal and external functioning, executive functioning, as well as small, but lasting effects on language skills. However, it has proven difficult to measure the significance of PCE because these children often have multiple biological and environmental factors that negatively impact their development. It is recommended that nurses be aware of, and receive specific training regarding the additional support and resources that this population may require.

What Interventions have been Implemented to Help Reduce Workplace Bullying Targeting New Graduate Nurses?

Cassie E. Dresen, Summer N. Jenkins, Abigayle E. Rickman, Kalyn M. Young, and Mary Koziura, Nursing

As of 2024 there will be a predicted shortage of 1.09 million registered nurses. With the growing baby boomer population, more hospitalizations than ever, and an aging workforce, hospital administration is working to increase employment and retention rates. Preventing these efforts is the growing incidents of workplace bullying towards new graduate nurses. Workplace bullying is any form of violent or hostile language, actions, or gestures targeted at another employee that affects their self-esteem, feelings of safety, or work ethic (Rocker, 2008, para. 5). Therefore, in order to determine the effects of workplace bullying, CINAHL database was accessed to review and compare studies based on new graduate nurses, workplace bullying, depression, nurse aggression, retention rates, patient care, education, and interventions. From these studies, data shows that these nurses are more likely to leave their positions, have decreased quality of patient care, and experience higher rates of depression. All of these contribute to the growing nursing shortage in the United States and abroad. Many studies have established that workplace bullying in the nursing field is a problem; however, less research has been done to implement effective coping techniques. The current research available has shown success with online education and transitional support programs. This literature review found that more research needs to be done on strategies to reduce or help cope with workplace bullying.

In Preterm Infants, what are the Effects on Morbidity of Using Skin to Skin Contact with Their Mothers as Compared to using Polyethene Wrap Within the First Week of Life?

Collin Jenkins, Victoria Mckinny, Cassidy Cowan, Keisha Yotter, and Mary Koziura, Nursing

Hypothermia is one of many reasons that contribute to a neonate's mortality. During this time, neonates are more susceptible to infectious diseases and hypothermia. Being at an increased risk for complications puts neonates at an increased risk of morbidity and mortality. In a study, kangaroo care, an intervention performed at birth that promotes skin-to-skin contact has physiologic benefits between a baby and his/her mother, as compared to the use of polyethylene. In 2016, 10% of the babies born in the United States were considered preterm, within that sample of 10%, 28% perished. This study searched for a positive correlation between mortality and the technique used to care for the infant after birth. The major keywords used to find results included: "polyethylene and preterm neonates," "skin-to-skin contact," and "kangaroo care." Limitations included in this literature review were finding results for neonates in developed countries. After critical appraisal of the literature, it was found that skin-to-skin contact method is more beneficial for a preterm infant. Although there are benefits to the use of polyethylene in wrapping the baby after birth, kangaroo care has been shown to benefit the survival rate of a neonate. There is a correlation between infants who receive skin-to-skin contact with their mothers in the first week of life and decreased morbidity rates.

Non-Pharmacologic Treatment Methods for Attention Deficit Hyperactivity Disorder

John Abel, Ashley Hammer, Nicole Miller, Kayla West, and Mary Koziura, Nursing

Psychotic symptoms, mood disorders, and other severe adverse effects are commonly seen in the use of Ritalin as a treatment for Attention Deficit Hyperactivity Disorder (ADHD), as well as in other pharmacological methods of treatment. This literature review explores research articles defining the most successful non-pharmacological symptom management techniques for school-aged children, 5 to 18 years of age, diagnosed with ADHD. ADHD is a learning disorder that affects over 3.62% of males and 0.85% of females ages 5 to 15 years of age. The symptoms of ADHD include hyperactivity, impulsivity, and inattention and is often associated with other comorbid conditions like oppositional defiant disorder, conduct disorder, and anxiety disorders. In order to outline the most effective treatments, a literature review was conducted to examine studies found through the EBSCO database, CINAHL, the National Center for Biotechnology Information (NCBI), and Google Scholar pertaining to non-pharmacological treatment for ADHD. Upon critically appraising these studies, computer attention training to enhance focus, behavioral therapies and variations of diet, such as adding fatty acids and eliminating intake of certain dyes were determined effective non-pharmacological treatments.

Therapies Used for Behavioral Outbursts in Autism Spectrum Disorders in Children

Elyse Castleman, Blake Houston, Meredith Orr, Kelsey Woosley, and Mary Koziura, Nursing

Since 2000, the occurrence of autism in children in the United States has increased by 119.4 percent. This literature review evaluated the effectiveness of nonpharmacological interventions used to decrease the occurrence of behavioral outbursts in children and adolescence, 18 years and younger, with Autism Spectrum Disorder (ASD). To determine the effectiveness of nonpharmacological interventions for the behavioral outbursts, review of the literature conducted using the academic database CINAHL, using the keywords, behavioral "interventions" and "autism spectrum disorder in children". Autism spectrum disorders are defined by a deficiency in social requisite and communication as well as by restricting social behaviors. It is common for all children and adolescence with ASD to experience anxiety, tantrums and hostility towards others. Within this age group, the most common behavioral issues observed were sleep, temper, hyperactivity, aggression, eating, and sensory. The studies read focused on musical therapy as the main intervention for behavioral outbursts in children and adolescence with ASD. The studies reviewed compared the decrease of behavioral outbursts from musical therapy to other interventions such as: theater

therapy, pet therapy, art therapy, and movement therapy. The results of our literature review concluded that no single therapy alone decreases the occurrence of behavioral outbursts in children and adolescence with autism spectrum disorder. Due to the extraneous variables present in the research, further studies should be conducted on more precise sample groups.

Influenza Vaccine in Asthmatic Children

Hadassah Hampton, Shea Mincher, Jordan Altrock, William White, and Mary Koziura, Nursing

Since October 1, 2017, the influenza virus has killed 97 pediatric patients in America. Patients age 5 to 12 years old with asthma are immunocompromised, putting them at a much higher risk of contracting the influenza virus. “Influenza causes more hospitalizations and deaths in children and adults than any other vaccine preventable disease in the US” (Piedra, 2013). In recent years, vaccination rates against the influenza virus continue to fall short of the Healthy People 2020 goal of 80% for vaccination of Americans (Shaikh & Byrd, 2016). We critically appraised data supporting both vaccinated and unvaccinated children with asthma. A literature review was done using the research databases EbscoHost and CINAHL Complete to find appropriate journals and studies applicable to the topic of interest. The key phrases “asthma,” “influenza,” “influenza vaccine,” “school-aged children,” and “preventable diseases” were used in the advanced search system to identify articles for review. In summary, the chosen articles support the stance that the live attenuated influenza vaccine (LAIV) is more effective than the inactivated influenza vaccine (IIV) in preventing the influenza virus. The LAIV is contraindicated in children with asthma due to adverse reactions from the introduction to the live virus. We conclude that the IIV is effective in preventing influenza infection and reducing asthma attacks in school-aged children. We recommend a longitudinal study comparing and contrasting the effects of the IIV in asthmatic versus healthy children.

How Much Do Cell Phones Contribute to the Spread of Communicable Diseases in the College Setting?

Rachel Hunter, Hadley Collins, Kathryn Pennington, Nardos Yalew, Hailey Hines, and Jennifer Weber, Nursing

Hand hygiene is important after regular events such as restroom use, playing outside, sneezing, or before eating a meal; yet, how common is it for someone to wash his or her hands after use of a cell phone? Is there an effective way to disinfect a cell phone? A cell phone touches many surfaces a typical hygienic person would never touch. How much do cell phones contribute to the spread of communicable diseases in the college setting? The purpose of this literature review is to find the extent of contamination, the types of microorganisms, and effective disinfectants of which have been evaluated by different studies. The research generator CINAHL and the searches “cell phone” and “communicable disease” were used to find research articles relevant to undergraduate students. The sources of original research were found in multiple countries and parameters were extended to a typical college campus. After synthesizing the literature, it has been determined that cell phones are a vector for multiple bacteria leading to infectious diseases. Research has shown that some disinfectant methods are more effective than others, but without proper hygiene education, recontamination will occur. Due to gaps found in the literature, it is recommended that future research includes effective and convenient ways to consistently disinfect a cell phone.

How Does Stem Cell Therapy Affect the Speed of Wound Healing and Resultant Tissue Functionality in Patients with Partial- to Full-Thickness Burns?

Jacqueline Wieneke, Donovan Brackett, Kelsey Hedge, Lucas Moss, and Mary Koziura, Nursing

The complexity of wound healing after partial- and full-thickness burn injury continues to challenge the medical community. Current treatment modalities, such as autologous skin grafts, are often prolonged, labor-intensive, and painful for the patient. In burn injuries with a large total body surface area (TBSA), donor sites are often limited. Furthermore, these skin grafts are often insufficient for comprehensive wound healing. Due to the current complexities of burn treatment, a review of the literature was conducted on emerging stem cell therapy as both an alternative and adjunct treatment. The keywords “burns” and “stem cell therapy” were utilized to generate results from the CINAHL database (30 results). The databases ScienceDirect and Geneva Free Medical Journals automatically populated related results. The literature suggests that mesenchymal, adipose-derived, and epidermal stem cell therapies improve the rate, functionality, cosmetic outcome, and long-term success of wound healing following burn injury in both animals and humans. These results support the use of stem-cell therapy as a beneficial treatment for burn injuries. A notable limitation of these studies was the use of reduced sample sizes. Future research should include clinical trials with greater sample sizes of human populations (n=30).

Optimizing the Synthesis of 2,6-Bridged Loperamide Analogs

Mallory Burns, Nathan Fields, and Susan Mercer, Pharmaceutical Sciences

The deaths due to opioid overdoses has increased drastically in the past few years and has led many people to label it as an opioid epidemic. Though media coverage of the epidemic has developed, research into the medicinal chemistry and pharmacology of the tolerance and dependence seen in opioids is necessary now more than ever. Mu opioid receptor (MOR) agonists, such as morphine, are particularly useful for their strong analgesic activity. However, many of the opioid analgesics produce undesirable side effects. The precise mechanism in which tolerance and dependence develops with MOR agonists is not known, but chronic opioid usage can induce changes at the cellular, receptor and systems level. Loperamide is a moderate MOR agonist, with a high affinity for the efflux transporter P-glycoprotein (P-gp), and is sold over the counter as an anti-diarrheal agent since it is not centrally active. Diphenoxylate is another moderate MOR agonist used to treat diarrhea; however, it is not a P-gp substrate and is centrally active. This project aims to explore the structure activity relationship (SAR) of loperamide and diphenoxylate to produce unique hybrid compounds that will provide insight to the development of tolerance. Parallel synthesis is utilized in this project to produce a series of loperamide analogs with incorporated structural features of diphenoxylate. In doing so, we hope to produce compounds that lack P-gp affinity, while maintaining MOR binding affinity. The commercially available reagents nortropinone HCl and N-(3,3-diphenyldihydrofuran-2(3H)-ylidene)-N-methylmethanaminium bromide were utilized to produce the key intermediate product NCF-1-18 through an N-alkylation reaction. Purified NCF-1-18 was treated with the following Grignard reagents via microwave assisted synthesis to afford the corresponding compounds: 4-methoxyphenylmagnesium bromide (SMB-1-23), 4-fluorophenylmagnesium bromide (SMB-1-25), p-tolylmagnesium bromide (SMB-1-29), 4-chlorophenylmagnesium bromide (NCF-1-23), and phenylmagnesium bromide (NCF-1-38). All compounds were purified using reverse phase preparative HPLC, characterized by LCMS, and will be submitted for MOR binding and P-gp substrate activity. This series of products will provide insight to loperamide scaffold SAR with regards to P-gp and MOR affinity.

Characterization of Individual Differences in CYP3A5 Activity in Vitro

Arsany Abouda, Kahari Wines, and Klarissa Jackson, Pharmaceutical Sciences

Cytochrome P450 (CYP) 3A enzymes, including CYP3A4 and CYP3A5, play an important role in drug metabolism. Unlike CYP3A4, CYP3A5 is highly polymorphic. The CYP3A5*1 allele leads to high levels of functional protein, whereas the CYP3A5*3 variant allele results in low to undetectable levels of CYP3A5. We hypothesized that genetic variation in CYP3A5 may lead to differences in the metabolism of tyrosine kinase inhibitors used in cancer therapy. The goal of this study was to characterize the activity of CYP3A5 in individual CYP3A5-genotyped human liver microsomes (HLM). CYP3A and CYP3A5-specific activity were measured in 12 individual genotyped HLM using T-5 and midazolam as probe substrates. T-5 N-oxidation was used as a selective marker of CYP3A5 activity, and midazolam 1'-hydroxylation was used as a marker of CYP3A activity. Individual HLM were incubated with T-5 or midazolam in the presence of NADPH, and formation of T-5 N-oxide and 1'-hydroxymidazolam, respectively, were measured by liquid chromatography - tandem mass spectrometry. T-5 N-oxide formation was significantly associated with CYP3A5 genotype. CYP3A5*1/*1 donors (expressers) had 18-fold higher levels of T-5 N-oxide compared to CYP3A5*3/*3 donors (non-expressers). Midazolam 1'-hydroxylation did not significantly differ by CYP3A5 genotype. These findings demonstrate that T-5 N-oxide formation is a much more selective measure of CYP3A5 activity compared to midazolam 1'-hydroxylation, and the results confirm a positive relationship between CYP3A5 genotype and CYP3A5 activity. Future studies will be carried out to examine the correlation between CYP3A5 activity and the metabolism of selected tyrosine kinase inhibitors in genotyped HLM.

Effectiveness of Alternating Electric Fields in Interrupting Breast Cancer Cell Proliferation

Naomi Derksen, Bethanne Venkatesan, Benton Warren, Morgan Stubblefield, Enobong Inam, and Alan Bradshaw, Physics

Electric fields arise from the polarity of cellular structures and the presence of ions in the cytoplasm. The polarity of the structures makes them susceptible to the influence of external electric fields. An external electric field will cause polar molecules to rotate, disrupting the polymerization of microtubules in spindle formation, and will inhibit the mitotic process which in turn induces apoptosis. We hypothesized that alternating electric fields (AEF) interfere with the mitotic division of breast cancer cells while maintaining the integrity of non-cancerous cells in vitro. To test this hypothesis, we grew cells from the MDA-B231 cell line between parallel wires separated by 1 cm in an open circuit in order to apply a 150 kHz electric field around the cancer cells. Our preliminary experiment used a field intensity of 30 mV/cm and resulted in 98% cell viability; subsequent experiments will test electric fields up to 2 V/cm. Following 24 hour AEF exposure, we quantify cell viability by trypan blue exclusion, and annexin V staining/flow cytometry. Cells are visually examined for membrane integrity and morphology immediately after treatment. Our study assesses whether the rapid replication of cancerous cells compared to normal cells causes cancer cells to be more susceptible to mitotic catastrophe due to the electric field, suggesting the use of AEF as a potentially more selective treatment option.

The Relationship Between Psychosocial Well-being and Empathy

Hunter Maerz, Matthew Naverias, Bess Ross, Dalton Rawls, and Paul Turner, Psychology

The interactions people have with one another make up the fabric of society. Much research has been done to better understand these interactions. It has also been found that viewing only the interaction does not give the full story, one must also examine the individuals that are part of the interaction. This, in part, has given rise to the personality tests, and other measurements, to help round out our knowledge of human interaction. While the predisposed temperaments are an important piece of the picture, we must also understand how the current psychosocial well-being of the individuals play into the equation. This necessity is where our research hopes to shine some light. We surveyed college psychology and nursing students at

Lipscomb University in order to determine if there is a relationship between psychosocial well-being and empathy, which is a major aspect of social interactions. For this research, empathy was broken into four aspects: perspective taking, fantasy, empathic concern, and personal distress. We hypothesized that psychosocial well-being would be positively correlated with the first three aspects of empathy (perspective taking, fantasy, and empathic concern), but negatively correlated with personal distress. Our hypothesis was not supported by the data. Our results indicated a weak negative correlation between psychosocial well-being and both the fantasy and empathic concern aspects of empathy. There was a weak positive correlation between psychosocial well-being and both perspective taking and personal distress.

Welfare Myths: Women, Poverty, and Policy

Rachel Adams and Cayce Watson, Social Work

The social work profession is founded on the mission “to enhance human well-being and help meet the basic human needs of all people” with an emphasis on vulnerable populations and people living in poverty. Social workers firmly oppose injustice and seek to dismantle the structural inequities which perpetuate social problems. The United States Census defines the poverty threshold as the minimum level of resources that are adequate to meet basic needs? (United States Census Bureau, 2017). Single mother households are particularly vulnerable to poverty with 26.6% households living below the poverty threshold compared to 5.1% of married households and 13.1% of single father households (USCB, 2017). Stigma, myths about welfare recipients, and systemic inequalities contribute to the phenomenon known as the feminization of poverty. Further, issues such as domestic violence and trauma disproportionately impact women in poverty (Aizer, 2011; Slabbert, 2016). This poster seeks to explore the condition of women in poverty and the influence of stigma on societal attitudes, social welfare programming, and self-perception. Current policies and programs that seek to mitigate poverty and increase opportunity will be reviewed for their effectiveness. Finally, the ethical and spiritual implications for social action and compassionate social policy change will be addressed and recommendations will be made for social workers and advocates to competently serve and uphold the dignity and worth of the vulnerable and stigmatized population of low-income female headed households.

The Implications of Shame: A Look Through the Lens of Social Work Practice

Daniel Schwanke and Amy Crossland, Social Work

Shame is a complex emotion that can influence the ways in which individuals engage with others and their environment (Engel, 2013). Literature points to the destructive impacts of shame in both personal and professional settings, and those in helping professions should have a working knowledge of the ways in which shame can impact client outcomes (Gibson, 2013). Integral to the social work profession are the field’s core values of service, social justice, dignity and worth of the individual, importance of human relationships, integrity, and competence (NASW, 2017). Self-awareness is also a vital attribute for those in the helping professions who wish to engage with clients without bias and judgment (Robson, 2016). Individuals who seek support while experiencing feelings of shame rely on social workers to utilize effective interventions, knowledge of the core values, and appropriate levels of self-awareness to inform and guide their professional work. The purpose of this presentation is to examine shame, its definition and impacts, through the lens of social work’s core values. Specifically, the presentation will 1) define shame 2) describe the impact of shame on clients and client outcomes 3) explore the impact of personal shame on practitioners engaging with clients and 4) provide concrete and evidence-based suggestions for addressing feelings of shame that arise as practitioners work alongside and empower clients.

Does a Healthy Rhizosphere Hold the Key to Sustainable Agricultural Practices?

Laura Hunt and Emily Stutzman, Institute for Sustainable Practice

Since plants first gave sprout toward the heavens, their roots have been developing an intimate relationship with the microbial environment within our soils. Modern technological advances are allowing us a peek into the rich symbiotic relationships between the flora and bacteria-fauna of the under-soil communities, and the rich diversity of life therein is revealing clues to the evolution of plant vitality and healthy soil formations. These co-evolving relationships have been decoupled as a result of our use of Nitrogen rich fertilizers and chemical pesticides, and re-establishing this holobiont will be highly instrumental for many of the agricultural solutions for global warming. Conservation agriculture, regenerative farming, and solutions “that address agroforestry, tree intercropping, and managed grazing, all feed the soil microbiome, reap the benefits thereof, and significantly reduce or eliminate the need for fossil-fuel derived fertilizers”. In the face of changing global climatic conditions, the question arises: Can the mutually beneficial rhizosphere be re-established for crop plants in order to promote crop yield and re-introduce the micro biotic symbiosis between plant roots and soil, thereby reducing our increasing reliance on chemical fertilizers and pesticides in our agricultural industries? Results are based on literature reviews in March 2018 of peer-reviewed articles published in academic journals from Science Direct, PLOS Biology, BMC Biology, and Cell Press.

What impacts will Making Family Planning Accessible to Third World countries have?

Leslie King and Emily Stutzman, Institute for Sustainable Practice

Family planning is an essential tool that should be easily accessible and taught in all countries of the world, and specifically Third World countries. Countries that are less developed have a birth rate that is increasingly higher than developed countries. This is due to a lack of education, and accessibility of contraceptives, and family planning tools. Paul Hawkin’s book Drawdown includes summaries of the one-hundred most impactful solutions to climate change. In Hawkin’s book family planning is listed as the seventh most impactful solution. Family planning is also linked to a number of other solutions named in Drawdown including population control, land use, and food waste. Family planning, and providing contraceptives to those in Third World countries will have an incredible impact on the planet’s well-being. A higher rate of contraception availability and use will cause the number of unwanted pregnancies to decrease greatly. Along with this decrease in population there is also a decrease in the amount of waste we produce. We can also make better use of our land by putting in solar panels, and wind turbines, instead of using them for more housing. It will also greatly decrease our emissions as a direct result of a lowered population growth. What impacts will making family planning more accessible to Third World countries have? Results are based on a literature review of scholarly, peer-reviewed academic articles found in GreenFILE conducted through March 2018.

Food Waste in Commercial Kitchens

Grant Leslie and Emily Stutzman, Institute for Sustainable Practice

Food waste has become a significant issue in the United States and many other regions of the world. The USDA estimates between 30% and 40% of food was wasted in 2010. In many countries, food waste is involuntary and due to poor roads, lack of refrigeration, or lack of proper packaging. In contrast, countries such as The United States waste vast amounts of food willfully throughout their food systems spanning farm to fork. Large amounts of food wasted like this leads to the release of greenhouse gasses through many avenues, contributing to global warming. The book Drawdown, suggests that reducing food waste is within the top three most effective ways to combat global warming. In addition, reducing the sting of global warming, the millions of tons of food wasted could otherwise have been used to combat hunger in impoverished areas of the world. In the United States, major contributors to this problem are restaurants,

cafeterias, and other commercial-style kitchens, due to regulations or lack thereof. What can be done for food waste in these commercial kitchens? This poster will discuss various solutions for this problem through analysis of peer-reviewed scholarly articles and relate them to topics within the text of Drawdown. Research was conducted through use of the online databases GreenFILE, ScienceDirect, and JSTOR. Results will be discussed.

What are the Economic Benefits for Farmers in Developing Countries Who Implement Agroforestry Practices?

Kelsi Lewis and Emily Stutzman, Institute for Sustainable Practice

With the world's population projected to rise steadily over the next fifty years, the world's agricultural yields will need to increase substantially in order to ensure food security. If traditional agricultural practices continue, however, there may be severe ramifications on food security and the environment. Traditional agricultural practices require the deforesting of land to create open fields, and deforestation is the primary cause of global climate change. In addition, eighty percent of the world's natural forests have already been destroyed, showing the world's great need for a more sustainable agricultural practice, preferably one that incorporates the cultivation and conservation of trees into its system. The practice of agroforestry is creating this desired system by growing crops and raising livestock alongside trees. This important practice brings together multiple solutions outlined in Paul Hawkin's book "Drawdown," such as silvopasture, tree intercropping, multi-strata agroforestry, and forest protection. Compared to traditional agriculture practices, agroforestry systems promote bio-diversity, increase productivity of the land, and preserve soil health. While agroforestry systems present many benefits, they also may cost farmers more money to initially input. For lower-income farmers in developing countries, utilizing agroforestry systems may not appear to be economically viable. However, there are copious short-term and long-term economic benefits for the farmers who do adopt this more sustainable practice. What are the economic benefits for farmers in developing countries who implement agroforestry practices? Research was conducted of peer-reviewed, scholarly articles from academic databases, namely GreenFile, ScienceDirect, and JSTOR, conducted through February 2018. Results will be discussed.

How Do Green Roofs Contribute to the Urban Heat Island Effect?

Kaitlyn Jordan and Emily Stutzman, Institute for Sustainable Practice

Green roofs have recently become a centerpiece of urban construction, boasting both economic and environmental benefits. Much of today's construction takes place in more urban areas. In these areas, the average temperature has risen higher than the rural land around it, due to a phenomenon known as the urban island heat effect. The surfaces that cover these areas are made of different thermal and radiative properties, meaning that it absorbs the heat in a different way than the previous land make up did. The new surfaces, such as roads and building roofs, are unable process the sun's energy in the same way, leaving it to be absorbed and stored in these areas. The Drawdown Project, edited by Paul Hawken, emphasizes the importance of green roofs by naming them number 73 on a list made up of 100 ways to reverse the effects of global warming. How do green roofs contribute to eliminating the urban heat island effect? Scholarly, peer reviewed research from Green File, JSTOR, and Science Direct will be used to answer this important question. Results will be discussed.

Mindful Consumption of Clothes in Modern America

Peyton Bottoms and Emily Stutzman, Institute for Sustainable Practice

Each year the American public purchases over 80 billion items of clothing, and throws away 11 million tons of textile waste. This pandemic of overconsumption is detrimental to the planet and toxic to our minds. Fast fashion companies are designed to perpetuate continual consumption, projecting constant obsolescence of trends, tying people's clothing to their sense of self, and eliminating any concept of need from shopping thought patterns. This constructed mindset plays a significant role in Americans consuming 400% more clothing than 20 years ago, which contributes to the degradation of resources and land, perpetuates horrid treatment of workers, and oversaturates the waste stream with textiles. The greatest power of this cultural attitude is its begetting of a mindless consumption. The solution is to bring attention and awareness to these habits and their harmful effects. Consumption is not by nature unsustainable; these societal and environmental damages can be mitigated by reintegrating a mindfulness into American shopping habits; these methods could be buying based on need, purchasing durable, high-quality, long-lasting goods, or purchasing clothes second-hand. Research question: How does the American approach to clothing consumption affect the environment, and how can we develop more mindful shopping habits? During March of 2018, research was conducted regarding the question at hand; results are based on a literature review of academically peer-reviewed scholarly journals including Science Direct, JSTOR, and Academic OneFile. Results will be discussed.

Can Bamboo Change the Western Mindset and Serve a Larger Purpose Beyond Carbon Sequestration and Flooring?

Bret Walters and Emily Stutzman, Institute for Sustainable Practice

Bamboo can substantially remove atmospheric carbon-dioxide (CO₂), increase accumulation of soil organic carbon, and improve socio-economic aspects. Bamboo is known as a carbon sink, due to the carbon sequestration rates of Bamboo, and the growing time to maturation being between 120 to 150 days. Bamboo can also grow in degraded areas, where poor soil quality is unable to support typical food crops such as rice or maize, thus making the land a viable management environment again. With comparable properties to Tropical hardwoods, Bamboo can replace their use in building materials, aiding in the reduction of overharvesting Rainforests. Bamboo, listed as #35 of importance in Paul Hawken's book Drawdown, brings together several aspects including Bamboo, Afforestation, and Indigenous peoples' land management. Afforestation establishing a forest or stand of trees to areas where there was no previous tree cover. Research was conducted of peer-reviewed scholarly articles from academic databases, namely ScienceDirect, conducted through February 2018. Results will be discussed. Can Bamboo change the Western mindset and serve a larger purpose beyond carbon sequestration and flooring?

How to integrate Sustainable Heating and Energy Technologies into Low Income Ger District?

Biligt Tsogsaikhann and Emily Stutzman, Institute for Sustainable Practice

The aim of this research is to integrate multiple sustainable technology to provide sustainable heating and energy for low-income housing. During the winter, heating in houses go into overdrive. However, the Ger districts in Ulaanbaatar, Mongolia use furnaces for their heating. Materials used in these furnaces could be anything burnable for fuel such as tires, plastic or coal. Unfortunately, all these materials produce hazardous pollutants that impose health risks and create smog in the city. The problem can span for most of the year due to the long winters of Ulaanbaatar. It is therefore imperative that research be done to identify available technologies that harvest and store renewable energy and which can be used to replace the harmful furnace materials that are used in the Ger district. The research should also take into account the regional, climatic, social, economic and technical factors in order to determine the most appropriate technology. The purpose of this study was to determine the best sustainable heating and energy technologies that can be adopted for use in the low income Ger district. The presentation will highlight the results from literature that was conducted by searching through the databases, such as Green file, science direct, and JSTOR.

What do American Shopping Habits Mean for the Environment, and How can we Develop More Mindful Patterns of Consumption?

Peyton Bottoms and Emily Stutzman, Institute for Sustainable Practice

Each year the American public purchases over 80 billion items of clothing, and throws away 11 million tons of textile waste. This pandemic of overconsumption is detrimental to the planet and toxic to our minds. Fast fashion companies are designed to perpetuate continual consumption, projecting constant obsolescence of trends, tying people's clothing to their sense of self, and eliminating any concept of "need" from shopping thought patterns. This constructed mindset plays a significant role in Americans consuming 400% more clothing than 20 years ago, which contributes to the degradation of resources and land, perpetuates horrid treatment of workers, and oversaturates the waste stream with textiles. The greatest power of this cultural attitude is its begetting of a mindless consumption. The solution is to bring attention and awareness to these habits and their harmful effects. Consumption is not by nature unsustainable; these societal and environmental damages can be mitigated by reintegrating a mindfulness into American shopping habits; these methods could be buying based on need, purchasing durable, high-quality, long-lasting goods, or purchasing clothes second-hand. Research question: How does the American approach to clothing consumption affect the environment, and how can we develop more mindful shopping habits? During March of 2018, research was conducted regarding the question at hand; results are based on a literature review of academically peer-reviewed scholarly journals including Science Direct, JSTOR, and Academic OneFile. Solutions were partly drawn from and inspired by Paul Hawken's Drawdown. Results will be discussed.

How do Indigenous Rights Affect Deforestation in the Amazon Rainforest?

Megan Bourland and Emily Stutzman, Institute for Sustainable Practice

The Amazon rainforest is one of the most biodiverse locations on Earth but it is threatened by deforestation which increases the effects of global warming and threatens the biodiversity of this tropical ecosystem. Indigenous people play an important role in protecting Amazonia because most protected areas are indigenous lands. The main conflict being faced by many right now is the demarcation of indigenous lands and whether or not they will be respected or even recognized. Efforts to protect this tropical forest as well as the rights of the indigenous people continue to be pursued. This topic relates to four solutions discussed in the book Drawdown, edited by Paul Hawken. Drawdown is an environmental book discussing the top one hundred methods to reversing global warming. The Drawdown strategies that protecting the amazon rainforest would cover include forest protection, tropical forests, indigenous people's land management, and women smallholders. As indigenous people experience environmental changes on their land, they work

to improve cultivation, extraction, and distribution and occurrence of species. Deforestation of Amazon rainforest leads researchers to ask, what role do indigenous people play in protecting the amazon rainforest? A literature review of peer-reviewed scholarly journal articles provides an answer to this question. Articles were found in the following databases: ScienceDirect, Complementary Index, GreenFILE, JSTOR Journals, Academic OneFile, through February 2018. Preliminary results suggest that recognizing Indigenous Reserves are effective ways to preserve the forests of the Amazon. Further results will be discussed.

Exhibits

Costuming Hedda Gabler

Morgan Bowling and June Kingsbury, Theater

While Ibsen's masterpiece Hedda Gabler was originally penned in 1891, the play has continued to be a staple in the study and practice of theatre. When Second Stage Student Theatre, a student lead theatre company I co-founded, decided to take on the challenge of this piece, we knew we wanted to modernize it to make it more relatable to our college audience. A facet of that modernized vision was the costuming for the show. I worked as costume designer with a vision of sleek modern lines, and a minimalist color palette. I decided to pay homage to the minimalism that is Scandinavian design because Henrik Ibsen is a Norwegian playwright, and all of his plays are based in the austere environment that is northern Europe. Furthermore, I incorporated the concept of Hygge, a Danish lifestyle meaning the use of comfort and coziness, into characters like Tesman and Thea to show their difference from Hedda's coldness. In the show there are three men that orbit around Hedda and her different traits. I decided to put all three men in shades of black and gray, to show they're relative interchangeable status to Hedda. However, Hedda spends the duration of the show in a pink satin slip that I constructed. However unwillingly, Hedda is trapped in her home, and therefore doesn't have the need to wear "real" clothing. The color and fabric of her slip also signify her aesthetic, for as she tells Lovborg, "make it beautiful."

Performances/Poetry Readings

Saba: A Documentary Series

Katelyn Bianchini and Sarah Gibson, Communications

Saba, the Unspoiled Queen, a five-square-mile island in the Dutch Caribbean with roads that cut sharply across cliff's edges. Soca music blares from vans with windows down; wind buffets the trees, scattering mangos across the jungle floor. How did Lipscomb Missions connect with this tiny tropical island fifteen years ago? Meet Michael and Aletha Thomas. After graduating from Lipscomb in 1999, Michael began medical school on Saba in 2000, but he and his wife became more than students there. Through teaching at the high school and participating in ministries, Michael and Aletha made friends who soon they called family. Three years later, Michael encouraged Lipscomb Missions' Jeff Fincher to bring the first team to Saba over spring break. Since, over three hundred students from Lipscomb have made the propeller-plane journey from St. Maarten to Saba, landing on the smallest commercial runway in the world, with the mission to serve and build relationships in the Saban community. *Saba: Journey to the Unspoiled Queen* is the first of three documentaries highlighting Michael, Aletha, and Lipscomb's journey to this hidden gem. The series is made up of original footage that I shot last summer, and drone footage, interviews, and additional media from Grant Exline and Erin Gupton. Gupton and I wrote the storyline, and I edited the piece over the last six months, selecting accompanying music, color correcting video and photos, enhancing audio, and animating text and map features.

At the Edge of the Woods

Sarah Rodden and Dana Carpenter, English and Modern Languages

"At the Edge of the Woods" is a short story about a group of children living in an apartment complex near a mysterious patch of woods in a small town in the Midwest. Bekah, her sisters, and their friends wrestle with the typical qualms of childhood, but also struggle with darker fears that lurk at the back of even the most innocent minds. Ultimately, Bekah must learn that sometimes adults are too busy hiding from the darkness to protect the children they love.

The Art of Shrinking

Peggy Miller and Jan Harris, English and Modern Languages

Peggy Miller's collection, "The Art of Shrinking," investigates the struggles that emerge when one tries to understand and articulate identity. The speaker returns to key events in her past, attempting to reconcile herself with "a world that wanted less and/ more of me all at once." Accepting the fluidity of identity and understanding, Miller's speaker attempts a retrospective of past events from the vantage point of the imperfect present, even as her past "still catches in my throat at the most inconvenient moments." In "The Art of Shrinking," moments of reflection release the speaker's ability to heal the fissures in her past and offers the audience a template as they wrestle with their own.

Wilderness

Kaylee Newland and Jan Harris, English and Modern Languages

Kaylee Newland's poetry collection, *Wilderness*, explores the demanding, yet necessary, lessons the speaker encounters over the course of an arduous hike. The trail's path sprints "uphill without regard for its followers" who "drag themselves up the trail." As the reader follows the speaker's ascent, they are challenged to transcend clichéd imagery and to begin rethinking how one builds community and self-awareness through their interactions with the natural world. Inspired by Mary Oliver's *Why I Wake Early* and Pablo Neruda's *Residencia en la Tierra*, Newland's *Wilderness* invites readers to recognize how perspectives can shift when nature takes an "elevated position," and when we take the time to pay attention,

or maybe notice for the first time, the natural systems that surround us. Newland's poetry invites its audience to loosen their expectations and open to the difficult lessons the trail offers.

Forwards, Backwards, Up and Down

Griffen Price and Jan Harris, English and Modern Languages

Griffen Price follows in the footsteps of contemporary American poets such as Billie Collins and Marie Howe, passing external stimuli through an internal lens which renders a wide variety of subjects subtly metaphorical. In the titular piece, the poet gazes from the precipice between past and present, "Forwards, Backwards, Up and Down" each cardinal direction revealing possible futures, scars of an unavoidable past, the rejoicing of self-growth, and the crumbling of self-doubt, respectively. Throughout the collection, recurring images of the wilderness and open ocean remind the reader that the most terrifying and exciting aspect of our future is its inability to be planned or conquered, only to be navigated and experienced as it arrives. Struggling against his past, Price arrives at the conclusion that his own destiny is not something to be singularly won, but consciously chosen.

Why Aren't We Equipped with a Manual?

Taylor Shannon and Jan Harris, English and Modern Languages

In "Why aren't we equipped with a manual?" Taylor Shannon follows in the tradition of poets like Linda Pastin, reconnoitering through formulations of identity and the family dynamics from which they spring. Roads spiral out into the night "under frigid stars" while families break apart when "something wedged" itself between them. Shannon's speaker asks the audience to stop engaging their "autopilot" and to turn off their "automated response" function. Once they follow her advice, they can dive below the immediate situations of their lives and find the inner demons that conceal themselves in the mundane.

Sodden Bricks and Star Stuff

Ashley Burklin and Jan Harris, English and Modern Languages

Ashley Burklin's Sodden Bricks and Star Stuff translates the practice of self-inquiry and self-reflection into poems. Following in the footsteps and commands of Burklin's speaker, the audience discovers the interconnectedness of human experience "through streets that are halfway familiar." One may discover worms in the bottom of their heart, or banshees hidden in their throats, but like the poems Heather Christle, every image forces the reader to grapple with the stability of the reality in which they find themselves. Each vignette leads reader and speaker further from the fantasy of childhood, and deeper into the liminal space of early adulthood where new iterations of self are possible.

A House Undivided

Rachel Kirsch and Jan Harris, English and Modern Languages

The creative non-fiction piece, A House Undivided, focuses on two different religions, and how they brought a family together. In today's day and age, there is so much controversy about different religions and different beliefs, that it's hard to find any middle ground. Rachel has had the unique opportunity to experience two different religions in one household, which provided her with slightly different insight than other Christian households. Growing up in a family that was both Baptist and Catholic opened her eyes to different perspectives. She was able to see how different the two religions were, but similar at the same time. This piece focuses on small, true moments when she was young that confused her, but ultimately formed her relationship with Jesus Christ. It's a testament to marriage and how even when a couple may not completely agree on specific aspects of each other's lives, it's still possible to fully love each other, have a great marriage, and raise a family together. Though there may be two different religions in one household, it is possible to come together and remain a house undivided.

This is Not Romantic

Jenna Phipps and Jan Harris, English and Modern Languages

In her collection, “This is not romantic,” Jenna Phipps introduces a speaker who longs for physical and emotional intimacy with others and herself. Using natural imagery such as candles, clothing, and water, the poems reveal different aspects of desire. The speaker experiences pain, fear, and passion through her interaction with the physical objects in the poems. As the collection progresses, the speaker discovers different facets of relationships, which steadily build in intimacy. She achieves sexual and emotional awareness, revealed through the concrete description of her physical surroundings and body. Exploring her desires, she explains, “I smile at you in silence and a soft hello cannot speak the volcano in my veins.” Throughout *This is not romantic*, the speaker discovers how to express her longing.

Half Water

Amy Hall and Jan Harris, English and Modern Languages

Amy Hall’s speaker in her collection, *Half Water*, investigates how art can help us process emotions like anxiety and depression. Hall’s speaker struggles with the death of a partner and coping with childhood abuse with vulnerable honesty. Hall’s verse explores how memories shape and are shaped by our imaginations and the process of deciphering that relationship. Following in the footsteps of Natasha Trethewey and Zachary Schomburg, Hall captures the liminal space between the dream and past, the dreamer and what she must decipher to wake.

Henceforth

Ryan Wilson and Jan Harris, English and Modern Languages

Ryan Wilson’s collection, *Henceforth*, voices a frustration at humanity’s inability to act from a place of love. Wilson’s speaker asks its audience to reflect on what would happen if humankind embraced love as its motivation. In the tradition of American lyric poets, like Walt Whitman, Wilson engages the lyric voice to encourage us to look at love more deeply, and allow it to affect our lives. Wilson’s collection calls the audience to look beyond themselves and make a difference, for the better.

Almost Adulthood

Meredith Neilson and Jan Harris, English and Modern Languages

Meredith Neilson’s collection, *Almost Adulthood*, playfully invites readers to contemplate the variety of freedoms and expressions an individual experiences. From coming of age, to coping with loss, to becoming an advocate for oneself, and one’s generation, Neilson’s poems encourage their audience to acknowledge that even though change and growth have occurred, an opportunity to do something still exists. *Almost Adulthood* reminds us that even though we have been “labeled,” we do not have to submit to that position, but rather we have the opportunity to “be bold in the completeness and wholeness of you.” Neilson’s speaker invites readers to join the evolutionary journey through pain that leads to progress.

Swallowing the Sun

Allyson Collins and Jan Harris, English and Modern Languages

The collection "Swallowing the Sun" by Allyson Collins walks beside the murky rivers of intimacy and emotional connection, dipping its toes in the disorder that follows the loss of both. In the style of Jeannine Hall Gailey and Heather Christel, Collins uses mixed imagery and a lyric female voice to chronicle a failed relationship, inviting her readers into the speakers tap dance with disillusioned desire and the stars as they learn to find themselves through disappointment. Collins shows us that undressing does not have to involve clothing, and through her verse reveals the story of rebirth and empowerment that begins when we understand fully the fluidity of grace and the self-discovery which can only bloom after trauma.

Heart Spread Wide

Morgan Beers and Jan Harris, English and Modern Languages

Morgan Beers', *Heart Spread Wide*, excavates the inner workings of the mind and body. Beers' introspection expresses a new kind of kinetic energy that balances internal and external motion, leading to a definition of self that emerges from observations of others. Through natural imagery, the speaker scrutinizes the connectedness of all organisms and questions their concurrent state of being: "involuntary inhabitants/ searching for a place." Beers admits that she is "still searching for perfection," as she pieces together moments of love, loss, anxious thoughts and "terrible goods." The reader is invited to follow the speaker's attempts to integrate her experiences into her identity, and, through a "return/ to the ground/ from which we grew," to examine the wholeness of themselves.

The Direction I Left In

Sam Hearn and Jan Harris, English and Modern Languages

Sam Hearn's first collection of poetry, "The Direction I Left In," narrates the journey of a young man caught between the mysterious maturity of nature and the arcane nature of modern maturity, reflecting a restless, introspective identity in which the speaker navigates failure, self-harm, and isolation. Reeling from the experience of making choices that repeatedly wound him, he seeks refuge in the remote wilderness. In the untamed, unknown environment, he embraces helplessness, a process which teaches him to release the illusion of total control over his life's direction. Following the inspiration of poets such as Christian Wiman, Hearn's quiet wit and unglorified imagery poke humbly at the fragile relationship between spirituality and self-image. The poems in this collection respond to various forms of human relationship, and while these relationships often create strife or loneliness within the speaker, it is the centering power of secure attachment, recurring throughout the collection in anecdotes of companionship and conversation, which ground him to a sense of innate value.

Raices

Leslie Shakira Garcia and Jan Harris, English and Modern Languages

The collection "Raices" by Leslie Garcia celebrates womanhood, immigration, and the duality of growing up Salvadoran-American. Garcia's use of code-meshing and bilingual language follow the tradition of Latinx poets such as Pat Mora, Julia Alvarez, and Yesika Salgado. The speaker of the collected mimics the story-telling tradition of Latin America by using imagery and personification. Love, soil, and mango trees all come alive. They transport the readers to the scenes that have made up the history of the speaker's family. The reader is introduced to grandmothers with "pink perm-curlers in their hair and cactus house slippers hugging their bunions" and the "mocosos grandchild that tug on their aprons." Garcia invites the reader to sit, listen, and eat with her familia as they explore the importance ancestry together.

Hive Mind

Kira Dunton and Jan Harris, English and Modern Languages

In her poetry collection, *Hive Mind*, Kira Dunton's speaker searches for peace as the bees form an intricately ordered hive in her mind. As the swarm of chaotic thoughts buzz through her head, the speaker looks for a way to find the situation "a little bit sweeter." Dunton presents her themes of language and distance, as she tries to translate her speaker's experiences into an order she can better comprehend. The speaker grapples with linguistic terms and French lessons because she feels "it's easier to process in a second language." The speaker discovers the distance she desires by looking down from airplanes and rocket ships, finding peace in what she chooses to leave behind.

"Pretend"

Amy Peabody and Dana Carpenter, English and Modern Languages

"Pretend" is a haunting short story about what happens when a child's imaginary friend becomes real. Set in an abusive foster home, this chilling tale is told from the perspective of two foster children: young Cassidy caught up in the darkness of her imagination, and Seth who constantly tries to ground her. This story deals with themes of love and abandonment while playing with concepts of disassociation and insanity.

Therapy

Ellison Gossett and Jan Harris, English and Modern Languages

Therapy, a short story by Ellison Gossett, explores one woman's journey to find herself in the midst of rising familial and relational pressure. Lacy, a woman obsessed with other people's thoughts, words, and stories, struggles to express her own voice. Gossett's piece validates and recognizes the drain that external pressure and internal conflict can have on one's sense of agency and their ability to make decisions. Each snapshot of Therapy gives the reader insight into the complexity of human motivations, as well as, provide them a new empathy for those struggling with self-doubt. Readers will cheer for Lacy's emotional breakthrough as well as feel empowered to take steps towards greater freedom and acceptance in their own journeys.

"The Kids Come Out at Night"

Amy Peabody and Dana Carpenter, English and Modern Languages

"The Kids Come Out at Night" follows young Peter as he refuses to allow his allergy to the sun keep him from exploring the world around him. Although this state might render most kids depressed or frustrated, Peter focuses on adventure and hope. This fairytale inspired screenplay explores themes of childhood, trying to understand what it means to be a kid when you cannot participate in typical childish activities.