



# **CELEBRATION**

**OF STUDENT RESEARCH  
AND CREATIVITY**

**SPRING 2019**

Northern Kentucky University



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## LETTER FROM THE PRESIDENT

To Our Celebration 2019 Participants and Guests:

Welcome to Northern Kentucky University's annual Celebration of Student Research and Creativity. I want to congratulate the students and faculty mentors who are participating this year, as well as say thank you to the guests and visitors joining us today.

This is our 17th year celebrating outstanding undergraduate and graduate research and creativity at NKU. We are so proud of our scholars and our creatives, and it is a joy to showcase their incredible work.

These projects and creative pieces enable our students to apply classroom instruction while sharing their knowledge and passion with the campus and community. This kind of active learning is so important, and it's central to how the university develops innovative student-centered strategies that align with the needs of the region.

As we celebrate student work this week, we also highlight the faculty mentors central to these projects. Our dedicated instructors here at NKU work alongside students on these projects, from fostering creative and intellectual skills all the way through helping students strengthen their presentation capabilities. The bonds our faculty work to build with students are evidence of this university's core values of excellence, integrity, inclusiveness, innovation and collegiality.

The work on display this week exemplifies what the people of NKU do for this region, as students learn skills and talent for successful careers and impactful lives. Our students are truly special, and they transform their communities and the world at large.

Again, congratulations to all whose work is showcased in this year's Celebration. We are grateful to all who have made this week so memorable.

Sincerely yours,

A handwritten signature in black ink that reads "Ashish K. Vaidya". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Ashish K. Vaidya, Ph.D.

President



## LETTER FROM THE PROVOST

Dear Celebration Participants,

It is my great pleasure to welcome you to the Northern Kentucky University 2019 Celebration of Student Research and Creativity!

This year's event continues the remarkable tradition of outstanding scholarly and creative work produced by NKU students under the guidance and mentoring of the faculty. The Celebration of Student Research and Creativity is a wonderful opportunity for our students to display their work through poster presentations, oral presentations, interactive demonstrations, performances, and exhibits of artistic work with the campus community. The continued growth in the number of participants each year is a true testament to the dedication of our students and faculty.

The Celebration of Student Research and Creativity provides evidence of the close connection between students and faculty that has become a hallmark of the NKU educational experience. These opportunities enhance student learning via intense engagement and discovery in a chosen academic field. The work is challenging. Research takes time and effort, but the rewards of this form of experiential learning can be tremendous.

On behalf of President Ashish Vaidya, the deans of our colleges, the chairs of our academic departments, and the entire NKU community, I congratulate you all on the research and creativity showcased during this annual celebration.

Sincerely,

A handwritten signature in black ink that reads "Sue Ott Rowlands". The script is fluid and cursive.

Sue Ott Rowlands

Provost and Executive Vice President for Academic Affairs



# CELEBRATION OF STUDENT RESEARCH AND CREATIVITY

## 2019 SCHEDULE OF EVENTS



### PRESENTATIONS AND PERFORMANCE TIMES/LOCATIONS

#### TUESDAY, APRIL 9 ACTIVITY

#### ROOM #

|                  |   |   |
|------------------|---|---|
| 9-10 a.m.        | Oral presentations (Honors, Psychology, and Engineering Technology)       | SU 109                                      |
| 9-10 a.m.        | Oral presentations (Sports Business, Marketing, Honors, and Psychology)   | SU 108                                      |
| 10-11 a.m.       | Oral presentations (Psychology and World Languages)                       | SU 109                                      |
| 10-11 a.m.       | Oral presentations (Honors, English, and History)                         | SU 108                                      |
| 11 a.m.-12 p.m.  | Oral presentations (Biology, Chemistry, and Computer Science)             | SU 109                                      |
| 11 a.m.-12 p.m.  | Oral presentations (Honors, English, Computer Science, and Communication) | SU 108                                      |
| 12-1 p.m.        | Oral presentations (English, Honors, and Counseling)                      | SU 108                                      |
| 12:15 p.m.       | Chamber Strings   | SU 102                                      |
| 12:30-2:45 p.m.  | Poster Session  | SU Ballroom                                 |
| 12:30-1 p.m.     | Pep Band  | Outdoor amphitheater                        |
| 12:35-12:55 p.m. | Percussion Ensemble   | Greaves                                     |
| 12:40-1 p.m.     | Dance Troupe  | SU 104                                      |
| 1-2 p.m.         | Oral presentations (Engineering Technology and English)                   | SU 108                                      |
| 1-1:20 p.m.      | Musical Theatre Troupe  | Outdoor amphitheater                        |
| 1:30-1:50 p.m.   | Student Choreographers  | SU 104                                      |
| 1:40-2:55 p.m.   | Philharmonic Orchestra  | Greaves                                     |
| 2-3 p.m.         | Oral presentations (Chemistry and Biochemistry)                           | SU 109                                      |
| 2-3 p.m.         | Oral presentations (Honors, Computer Science, and Biology)                | SU 108                                      |
| 3-4 p.m.         | Oral presentations (Anthropology, English, and Honors)                    | SU 109                                      |
| 3-4 p.m.         | Oral presentations (English)  | SU 108                                      |
| 4-5 p.m.         | Oral presentations (Honors and English)                                   | SU 108                                      |
| 5:15-6:30 p.m.   | Evening Poster Session  | Eva G. Farris Reading Room – Steely Library |

\*for additional SOTA events in the month of April please consult <https://sota.nku.edu/events.html>



### ORAL PRESENTATION SCHEDULE

#### TUESDAY, APRIL 9

##### 9-10 A.M. IN STUDENT UNION (SU) 107

**228- MALLORY EILERMAN, "Comparing Effects of Different Models of Addiction on Attitudes Toward Opioid Use Disorder (OUD)" (Honors Capstone)**

FACULTY SPONSOR: Perilou Goddard (Psychological Science)

**283- RANDY CLARK, "The Sixth Man: Developing Gameday Atmosphere Through Consistency and Structure" (Honors Capstone)** FACULTY SPONSOR:

Danielle Todd (Music)

**286- ANUSHA TIMLA, "Line Following Robot" FACULTY SPONSOR: Zeel Maheshwari (Physics, Geology and Engineering Technology)**

**288- DARCI PONCHOT, "Interviews with NKU Students about their Majors and Interests" FACULTY SPONSOR: Belle Zembrodt (Honors College)**

##### 9-10 A.M. IN STUDENT UNION (SU) 108

**25- MATTHEW CALEB CRUTCHER, "Longitudinal Analysis of the NKU Brand" FACULTY SPONSOR: Joe Cobbs (Marketing, Sports Business and Construction Management)**

**31- REBECCA BRERETON-FARR, "Studying the Outcomes of Breast Cancer 'Curative' Options" (Honors Capstone)** FACULTY SPONSOR: David Raska (Marketing, Sports Business and Construction Management)

**73- JACKSON COATES, "An Analysis of the Common Core State Standards" FACULTY SPONSOR: Tonya Krouse (English, Honors College)**

**150- KAYLA HAYES, "Neurocognitive and Motor Recovery in Substance Use Disorders" (Honors Capstone)** FACULTY SPONSOR: Cecile Marcinski (Psychological Science)

##### 10-11 A.M. IN STUDENT UNION (SU) 107

**158- CASSANDRA RINEHARD, "En Amitiés Créoles: Found Poetry in Praise of Creoleness" FACULTY SPONSOR: Gisèle Lorient-Raymer and Iliana Rosales Figueroa (World Languages and Literature)**

**227- ELI TERRY, "JR's Photographic Lens: Giving a Voice to the Voiceless" FACULTY SPONSOR: Gisèle Lorient-Raymer (World Languages and Literature)**

**236- JENNA WALLIN, "The Power of Words: Lessons from Caribbean Literature"** FACULTY SPONSOR: Iliana Rosales Figueroa and Gisèle Lorient-Raymer (World Languages and Literature)

#### 10-11 A.M. IN STUDENT UNION (SU) 108

**55- RACHEL SIZEMORE, "A Hideous Progeny: Sublime Masculinity and Performativity in Frankenstein"** FACULTY SPONSOR: Tonya Krouse (English, Honors College)

**101- KATHLEEN BRYANT, "The Degradation of the Small Farm and its Transnational Effects"** FACULTY SPONSOR: Tonya Krouse (English, Honors College)

**163- LIZA M. VANCE, "Unearthing Resistance through Educational Equality: A Brief Look into Daily Life at the Parker Academy from Personal Correspondence and Material Culture"** FACULTY SPONSOR: William Landon (History and Geography)

**222- JAMES HARRINGTON, "The Indian Removal Act of 1830 and How it Changed U.S. Policy towards Native Americans"** FACULTY SPONSOR: Andrea Watkins and Brian Hackett (History and Geography)

#### 11 A.M. -12 P.M. IN STUDENT UNION (SU) 107

**137- COLIN HARTMAN, "Novel Inactivation of the Causative Fungus of the White Nose Syndrome with Methoxsalen and Ultraviolet A Light"** FACULTY SPONSORS: Joseph Mester and Alan Cohen (Biological Sciences)

**201- MARIA STEWART, "Examining the Role that Iroquois Genes Play During Embryonic Development"** FACULTY SPONSOR: Emily Shifley (Biological Sciences)

**203- CORBIN ARRASMITH, "Various Tools for Quantifying Diffusion of a Model Analyte Set via Capillary Electrophoresis"** FACULTY SPONSOR: Charlisa Daniels (Chemistry and Biochemistry)

**287- GEORGE HAGAN, "An Exploration into System Administration" (Honors Capstone)** FACULTY SPONSOR: Scot Cunningham (Computer Science)

#### 11 A.M. -12 P.M. IN STUDENT UNION (SU) 108

**61- ZACHARY O'BANION, "Understanding Interactive Narrative" (Honors Capstone)** FACULTY SPONSOR: Jennifer Cellio (English)

**81- ALEX OWENS, "Puzzler, A Programming Language for 2D Puzzle Games" (Honors Capstone)** FACULTY SPONSOR: Jeffrey Ward (Computer Science)

**154- CLAY BONIN, "Hip-Hop Music's Influence on the Scope of Popular Culture in the 2010s"** FACULTY SPONSOR: Sara Drabik (Communication)

**175- CHRISTOPHER WEAVER, "What Constitutes Well-Adapted Films Based on Novels" (Honors Capstone)** FACULTY SPONSOR: John Alberti (English)

#### 12 -1 P.M. IN STUDENT UNION (SU) 108

**26- MAE MILLER, "Mental Health and the Dance Industry"** FACULTY SPONSOR: Tonya Krouse (English, Honors College)

**35- LAUREN TURNER, "Gender Inequality in Virginia Woolf's The Years: Rose and Martin"** FACULTY SPONSOR: Tonya Krouse (English, Honors College)

**49- MOLLY WEIGEL, "The Effects of Plants on Students' Stress" (Honors Capstone)** FACULTY SPONSOR: Jennifer Sharp (Counseling, Social Work and Leadership)

#### 1 -2 P.M. IN STUDENT UNION (SU) 108

**59- MIGUEL ORTIZ REJON, "Mechanical Properties of 3D Printed Steel"** FACULTY SPONSORS: Seyed M. Allameh and Roger Miller (Physics, Geology and Engineering Technology)

**79- ANNA CAMELE, "Virginia Woolf's Feminism vs. Feminism Today"** FACULTY SPONSOR: Tonya Krouse (English, Honors College)

#### 2 -3 P.M. IN STUDENT UNION (SU) 107

**182- JAMISON BURCHETT, MAGGIE THOMAS, DOMINIC RUWE, RACHEL MORGESON, REGAN BALES, "Using RNA Interference to Identify the acp3U tRNA Modification Enzyme in Higher Eukaryotes"** FACULTY SPONSOR: Michael Guy (Chemistry and Biochemistry)

**192- DAISY DIVITA, "Identification of Conserved Motifs Important for Trm732 Function in Yeast"** FACULTY SPONSOR: Michael Guy (Chemistry and Biochemistry)

**209- LOGAN WAGNER, "Neurotransmitter Supplementation: Smart or Scam?" (Honors Capstone)** FACULTY SPONSOR: Amber Onorato (Chemistry and Biochemistry)

#### 2 -3 P.M. IN STUDENT UNION (SU) 108

**186- LILLIE PENNINGTON, "Healthcare Experiences of People with Disabilities" (Honors Capstone)** FACULTY SPONSOR: Shauna Reilly (Political Science, Criminal Justice and Organizational Leadership)

**262- BENJAMIN GOODER, "Small and Efficient Messaging System (SEMS): Context Sharing Using Probabilistic Data Structures"** FACULTY SPONSOR: Samuel Cho (Computer Science)

**276- ASHLEY WENTWORTH, "Photosensitizer and UVA Treatment of Fungi"** FACULTY SPONSOR: Joseph Mester and Alan Cohen (Biological Sciences)

#### 3 -4 P.M. IN STUDENT UNION (SU) 107

**63- AMANDA ANDREWS, "Water Deposits Connection to Decreased Evidence of Burial Practices in Iron Age Britain and Ireland"** FACULTY SPONSOR: Michael Simonton (Sociology, Anthropology, Philosophy)

**76- MADISON SAYATOVIC, "Living More than the Minimum"** FACULTY SPONSOR: Tonya Krouse (English, Honors College)

**107- SARA LEONHARTSBERGER, "The Living Detective: Sherlock Holmes' One Hundred Thirty Year-Long Case" (Honors Capstone)** FACULTY SPONSOR: Paige Byam Soliday (English)

**187- JESSICA SHARKEY, "Applying Counseling Skills in the Workplace: An Interdisciplinary Project"** FACULTY SPONSOR: Rachel Zlatkin (Honors College)

#### 3 -4 P.M. IN STUDENT UNION (SU) 108

**185- ONYINYE UWOLLOH, "Moby-Dick, Benito Cereno and Pidgin through a Nigerian Lens"** FACULTY SPONSOR: Robert Wallace (English)

**188- SUMMER SMITH, "Weaving 'the Loom of Time': A Hand-Crafted Moby-Dick Scarf"** FACULTY SPONSOR: Robert Wallace (English)

#### 4 -5 P.M. IN STUDENT UNION (SU) 108

**3- CHARLOTTE KALFAS, "Is the Pen Mightier than the Syringe? Revisiting Narratives of Opioid Addiction" (Honors Capstone)** FACULTY SPONSOR: Andrea Gazzaniga (English)

**9- ALLISON WESTMOORE, "The Portrayal of Mental Illness in Film and Television" (Honors Capstone)** FACULTY SPONSOR: Allison Godel (Honors College)

**257- MEGAN HODORY, "Of Forjs and Chaynces" (Honors Capstone)** FACULTY SPONSOR: Stephen Leigh (English)

# ORAL AND POSTER PRESENTATIONS

## ABSTRACTS ARE LISTED BY ABSTRACT IDENTIFICATION NUMBER

### 3. Is the Pen Mightier than the Syringe? Revisiting Narratives of Opioid Addiction

**CHARLOTTE KALFAS: English, Honors Capstone, Arts and Sciences;**

FACULTY MENTOR: Andrea Gazzaniga; ORAL PRESENTATION

Analyzing Thomas De Quincey's *Confessions of an English Opium Eater* (1821) and Dr. John Harrison Hughes' *Autobiography of a Drug Fiend* (1916), I argue that the same pathways to addiction that plagued De Quincey and Hughes are the ones that still haunt us today and that their inclination to write through the trauma of addiction was a natural reaction to being marginalized as an "addict." By examining opioid addiction through the lens of literary texts and how they are constructed, we can achieve a greater understanding of what leads to addiction and how modern society should respond to it.

### 4. Heteroaryl Isocoumarins as Potential Aromatase Inhibitors: Substrate Scope Investigation and Mechanism Study Using 18O-Acetophenone

**QUYNH NGUYEN: Chemistry and Biochemistry, Chemistry, Arts and Sciences;**

FACULTY MENTOR: Lili Ma; POSTER PRESENTATION

This project focuses on substrate scope investigation and mechanism study of domino reactions generating heteroaryl isocoumarins as potential anti-breast cancer drug candidates. A variety of ketones and heteroaryl halides were tested under optimized reaction conditions. Over a dozen of heteroaryl isocoumarins were successfully synthesized. In addition, 18O-acetophenone introduced from phenylacetylene, H<sub>2</sub>18O, MeOH, and CF<sub>3</sub>CH<sub>2</sub>OH was used to narrow possible mechanistic routes of domino reactions. Future analyses include HRMS and bioassay to confirm chemical structures and efficacy in aromatase inhibition of synthesized products, respectively.

### 5. Development and Validation of the Wellness Attitudes Questionnaire

**GAGE AMMONS, RACHEAL POWERS, KRISTEN MAHAM, MAYA KLINGER, CELESTE DICKESON: Psychology, Industrial-Organizational Psychology, Arts and Sciences;** FACULTY MENTOR: Philip J. Moberg; POSTER PRESENTATION

Growing attention to employee health and wellness prompted the development and initial validation of a scale measuring attitudes toward eight proposed, but empirically untested, wellness dimensions. Exploratory factor analysis (N = 430) revealed three underlying factors, while validity evidence linked wellness attitudes to general health, job stress, and job satisfaction.

### 6. Examining the Relationship between Physical Exercise, Physical Activity, and Stress Tolerance: Development and Validation of the Stress Tolerance Questionnaire

**GAGE AMMONS: Industrial-Organizational Psychology, Arts and Sciences;**

FACULTY MENTOR: William Attenweiler; POSTER PRESENTATION

Increasing workforce demands, which negatively affect employee health and well-being, prompted the development and initial validation of a new measure and theoretical model of stress tolerance. Exploratory factor analysis (N = 352) and SPSS AMOS path analysis revealed initial support for the stress tolerance construct and model.

### 7. Impact of Multi-Level, Peer-to-Peer Simulation on Student Satisfaction

**CAYLA DESTEFANI, CALEB SCHMITT: Nursing, Health Professions;** FACULTY

MENTOR: Gina Fieler, Julie Hart, Shawn Nordheim; POSTER PRESENTATION

The objective was to determine whether multi-level, peer-to-peer simulation education affects student satisfaction. Review of literature found that nursing students benefited from peer-to-peer simulation experiences. The convenience sample consisted of BSN students who missed clinical and participated in a multi-level simulation. Participants completed a satisfaction survey; 97.57% of participants reported high satisfaction working with peers from various levels in the program. Qualitative themes included leadership development, mentorship, collaboration, and skill improvement. Multi-level, peer-to-peer simulation is an

innovative way to foster leadership, mentorship, confidence, and collaboration in nursing education. These foundational skills are vital for success after graduation.

### 8. Sexual Violence on Campus

**KRYSTEN CREAMER: Social Work, Education and Human Services;** FACULTY MENTOR: Suk-hee Kim; POSTER PRESENTATION

Sexual assault is a worldwide issue particularly prominent on college campuses. Studies show that one-third of males in college indicate a likelihood of sexually assaulting someone if they knew there would be no repercussions. The purpose of the study is to determine if there is a correlation between someone's self-report of that likelihood and their score on the Adverse Childhood Experiences (ACEs) questionnaire. The results of this study are expected to examine how many students at Northern Kentucky University, regardless of gender, would express a likelihood of sexually assaulting someone if they knew there would be no repercussions.

### 9. The Portrayal of Mental Illness in Film and Television

**ALLISON WESTMOORE: Honors Capstone, Honors;** FACULTY MENTOR: Allison Godel; ORAL PRESENTATION

Current work in the field of psychology has shown the ways the media has created a negative stigma of mental illness through its negative and inaccurate portrayals. This project's overall goal is to analyze the portrayal of mental illness in film and television, whether or not it is accurate to the reality of the mental illness, and how the portrayals are adding to the negative stigma of mental illness. Over 24 different films and television shows were used to analyze the portrayal of seven different categories of mental health disorders, as listed in the DSM-5.

### 10. The True Costs of Pornography

**ALEXIS ROARK: Political Science, Political Science and Criminal Justice, Arts and Sciences;** FACULTY MENTOR: Kimberly Weir; POSTER PRESENTATION

Earning an estimated \$10 billion in annual sales, the pornography industry profits from making the female body a vehicle for men's pleasure. This objectification of women's bodies normalizes violence against women, contributes to rape culture, and reinforces the patriarchy. Pornography has become commonplace in Western societies whose influence has a global reach. The pornography industry has convinced society that pornography is a natural extension of women's liberation, a route to money and fame, and a freedom granted by the First Amendment. When these shallow myths are analyzed, it is easy to see how untrue these ideas are.

### 16. The Affects of Social Media on Mental Health

**OLIVIA JOHNSTON: Social Work, Education and Human Services;** FACULTY MENTOR: Suk-hee Kim; POSTER PRESENTATION

As social media has been evolving so has the seriousness of mental health among the nation. Social media is becoming a rising phenomenon and has negative and positive effects on the daily lives of college students around the world. The purpose of this study is to determine how social media affects mental health among college students on college campuses. The results of this study intend to be used to educate students on how sectors of social media can affect mental health and how using social media properly can decrease the likelihood of negative effects on mental health.

### 17. Sleep Deprivation among College Students and Ramifications

**ALIJAH CARPENTER: Social Work, Education and Human Services;** FACULTY MENTOR: Suk-hee Kim; POSTER PRESENTATION

Getting an adequate amount of sleep can be extremely difficult for college students. However, there is little to no research on how sleep deprivation can negatively affect the psycho-social concerns among college students. To address this gap in the literature, this research study examined the negative outcomes of sleep deprivation on college students in the long and short term. This study



used non-probability, purposive sampling to collect data from college students. The results of this study will help identify barriers to student academic success on college campus to better understand and support for their students.

#### 18. Anxiety on NKU's Campus

**CHRISTINE CARNESSAL: Social Work; FACULTY MENTOR:** Suk-hee Kim; POSTER PRESENTATION

Anxiety disorders are some of the most common mental illnesses among adults and a common problem among college students in the United States. Academics, finances, food insecurities, and time management are just some of the factors that can increase levels of anxiety on a college campus. The purpose of this study is to look the different causes of anxiety for NKU students. Findings after the completion of the study expect to assist us in better understanding of student-mental health illness at NKU.

#### 19. The IKEA Experience: Cultural Heterogeneity and Branded Glocalization DEE BROOMHEAD: Political Science, Anthropology, Arts and Sciences; FACULTY MENTOR: Kimberly Weir; POSTER PRESENTATION

The international spread of corporate giants is a frequently cited example of modern globalization. It is often assumed that brand globalization is synonymous with cultural homogenization. However, ethnographic evidence suggests that globally recognized objects take on specific local meanings in different contexts. This process, therefore, can be more accurately described as "glocalization." In response to the evidence for glocalization, multinational corporations have begun to tailor their product and aesthetic landscape to be more applicable in a wide range of culture areas. This poster deconstructs this international marketing method using the Swedish furniture brand, IKEA as a case example.

#### 20. The Unforeseen Consequences of China's One-Child Policy LYDIA SCHUBARTH, ELI TERRY: Political Science; International Studies; Arts and Sciences; FACULTY MENTOR: Kimberly Weir POSTER PRESENTATION

For three decades, China had a one-child policy in place to regulate the size of its exponentially growing population. A strong son preference in China led to parents aborting and abandoning female babies. Due to this practice, China faces a large gender disparity among men and women. This poster will analyze how his one-child policy affected Chinese society, the problems it encounters in achieving gender equality, and the challenge of Chinese men finding brides.

#### 21. You Are What You Wear: Shop Fair Trade

**RAVEN MCNEAL: Honors, English, Arts and Sciences; FACULTY MENTOR:** Kimberly Weir; POSTER PRESENTATION

Fair-trade clothing is a way of producing clothing that helps producers in developing countries to have better living conditions. Fair trade advocates push for the payment of higher prices to exporters and improved social and environmental standards for producers. Encouraging fair-trade clothing choices would seek to inform buyers who are often unaware of all the baggage that comes with the single shirt they bought from Forever 21. I will consider why fair-trade clothing is a better choice than fast fashion when it comes to helping the earth and its fellow inhabitants, even if it means paying more.

#### 22. Pharmacist of the 19th Century

**JENNIFER MILLER: Anthropology, Arts and Sciences; FACULTY MENTOR:** Denise Knisely; POSTER PRESENTATION

Medical advances of the 18th and 19th centuries created a feeling that all diseases could be cured. This, in turn, created a public market hungry for medications to treat those diseases. While many of the new patent medications were little more than vegetable oils with liberal doses of alcohol, marketed to cure all your ills in one elixir; others were legitimate compounds prescribed by doctors and made by pharmacists. Pharmacists were educated and often had the community's best interest at heart. One such local pharmacist was G.A. Zwick. He made a huge impact in Cincinnati through a lifetime spent curing ills and trying to ensure these cures were safe and effective.

#### 23. Tandem Synthesis of Heteroaryl Isocoumarin Derivatives as Potential Aromatase Inhibitors

**WILLIAM TATE RENZENBRINK: Chemistry, Honors Capstone, Arts and Sciences; FACULTY MENTOR:** Lili Ma; POSTER PRESENTATION

Heteroaryl isoflavanones play an important role in biochemical and medicinal chemistry. In our previous study, heteroaryl isoflavanones were found to be potent aromatase inhibitors, a class of anti-breast cancer drug candidates. Specifically, domino reactions were discovered, which produce heteroaryl isocoumarin derivatives through tandem steps in one-pot synthesis. This research focused on the substrate scope of the domino reactions, using consistent conditions and microwave irradiation. The aromatase inhibition efficiencies of the successful products will be tested via bioassay.

#### 24. The Effects of Reading Speed and Retrieval Practice on Reading Comprehension

**CARRIE WEIMER: Psychological Science, Psychology, Arts and Sciences; FACULTY MENTOR:** Kalif Vaughn; POSTER PRESENTATION

Speed reading, although perceived to be effective, typically decreases reading comprehension. We explored whether quizzing could make speed reading more effective. We explored two types of quizzes: pre-quizzes and post-quizzes. Pre-quizzes may improve speed reading due to a priming effect, whereas post-quizzes may improve speed reading by reinforcing the material. Participants read one passage at a normal rate and another at a fast rate while also either taking pre-quizzes, post-quizzes, or no quizzes on the content. Results from this research will help inform student study habits for maximum comprehension.

#### 25. Longitudinal Analysis of the NKU Brand

**Matthew Caleb Crutcher: Business Sports Business and Event Management; FACULTY MENTOR:** Joe Cobbs; ORAL PRESENTATION

This project examines NKU stakeholder surveys administered between 2012 and 2018, consisting of samples of current students, alumni, and donors. After consolidating the data into a single spreadsheet, SPSS is used to analyze statistical trends from year-to-year and between groups. The findings generally suggest positive brand growth and enable NKU Athletics and the University to understand the marketing implications since 2012, such as the impact of reaching the 2017 NCAA March Madness men's basketball tournament.

#### 26. Mental Health and the Dance Industry

**MAE MILLER: Honors, Theatre, Arts and Sciences; FACULTY MENTOR:** Tonya Krouse; ORAL PRESENTATION

This presentation looks into both the positive and negative effects of dancing on mental health. It also speaks on DMT, the negative view that society has on the dance industry as a whole, and how these views and expectations negatively impact the dancers. It was found that the biggest problems that dancers struggle with today, mental health wise, are perfectionism, eating disorders, anxiety, and depression. By knowing what dancers are struggling with and why they are a problem the issues can be addressed and fixed, which will be of benefit to the industry as whole and benefit the public view on the industry as well.

#### 27. Laboratory Environment Monitoring: Safety and Control System with GSM Interface

**BRIAN L. DECKER: Electronics Engineering Technology, Arts and Sciences; FACULTY MENTOR:** Gang Sun; POSTER PRESENTATION

This project consists of the design, code development and hardware implementation of a laboratory environment monitoring and robot safety cage control system. This system uses a micro-controller to process input from environmental and presence sensing devices, display parameters to a local display, arm/disarm the power supply of the robot system and send alerts via GSM text messages to designated cellular phones when parameters are exceeded. Additionally, a text-parsing routine will allow remote commands, system status updates and inquiries of current environmental data to be sent via GSM from authorized cellular phones without the need for a separate application.

#### 29. Utilization of Video for Competency Evaluation

**GINA FIELER: Education, DNP; FACULTY MENTOR:** Lynne Zajac; POSTER PRESENTATION

Learner self-assessment and accountability are important features in nursing education. Innovative competency sessions enhance the delivery of quality care. This research project investigated the addition of video into established competency evaluations for the purpose of learner review and self-evaluation. The project used an experimental design to determine the effects of video use on learner self-evaluation. With 95% confidence, results showed a mean total

evaluation score for those without the video was higher than those with the video. Results supported the hypothesis that those without a video would inflate their self-evaluation scores by not having video recall of the session.

**30. Workplace Flexibility and Its Effects on Work-Family Balance of Women**  
**SIRIRUAY METHAKITWARUN: Organizational Leadership, Sociology, Arts and Sciences; FACULTY MENTOR: Ada Cenkcj; POSTER PRESENTATION**

Workplace flexibility means allowing employees with the opportunity to control the extent of the when, where, and how long they do the given tasks in relation to work. As of 2016, there are as many as 74 million employed women in the US. For these women, despite the gradual increase in gender equality of men and women in the workplace, workplace flexibility remains to be a crucial issue for achieving work-family balance. Thus, this research examines the existing literature in understanding as to how workplace flexibility affects work-family balance of women in the US, in particular, those with children.

**31. Studying the Outcomes of Breast Cancer "Curative" Options**  
**REBECCA BRERETON-FARR: Marketing, Honors Capstone, Business; FACULTY MENTOR: David Raska; ORAL PRESENTATION**

In today's culture there are immense amounts of pressures placed upon women to meet an ideal standard of beauty, including breast cancer survivors. Anecdotal evidence suggests that these women have experienced unfair consultations and practices from medical professionals who believe that they should undergo more surgery for breast reconstruction based on the societal norms of the female body. In the present research project, we explore whether these pressures exist, potential drivers of these pressures, and how they impact patient's well-being.

**32. The Popular Culture and Philosophy of Bruce Lee In Martial Arts**  
**ARIA BRICE: Pop Culture, Electronic Media and Broadcasting, Arts and Sciences; FACULTY MENTOR: Yasue Kuwahara; POSTER PRESENTATION**

An in depth analysis of how Bruce Lee and his post-mortem fame came to be, why he is still prevalent to this day, how his style of Jeet Kun Do affected true martial arts and artists all around the world, and how he changed the perspective of those who showed great prejudice towards him and his work.

**34. Assessing Willingness to Trust in Virtual Task Settings: Scale Development and Preliminary Validation**

**NICHOLE EDWARDS, DZENITA SOFTIC, DANA PATRICK, STEPHANIE FOX: Industrial Organizational Psychology, Arts and Sciences; FACULTY MENTOR: Phillip Moberg; POSTER PRESENTATION**

As organizations increasingly employ virtual groups to accomplish essential tasks, the issue of relying on unfamiliar individuals prompts concern for efforts to collaborate cooperatively. This study describes the development and preliminary validation of a scale designed to assess trust in virtual teams and provides evidence of factor structure and external validity. The types of trust within virtual team settings which were assessed were swift-based, knowledge-based, and deterrence-based trust. distinct patterns of relations emerged with measures of external validity constructs that distinguished among these three dimensions. Further research into these factors could assist in the understanding of trust within virtual teams.

**35. Gender Inequality in Virginia Woolf's The Years: Rose and Martin**  
**LAUREN TURNER: English, Arts and Sciences; FACULTY MENTOR: Tonya Krouse; ORAL PRESENTATION**

Martin and Rose in Virginia Woolf's novel *The Years* reveal the evolution of gender inequality and gender stereotypes from the Victorian to the Modern era. They portray male and female perspectives on life, and though they are brother and sister, their lives differ radically because of the gender to which they were born. Scholars often discuss the impact of gender on Rose's characterization, but they rarely attend to the significant influence of gender norms on Martin's characterization. My paper shows how gender shapes identity, and that Woolf's portrayal of gender and its influence pertains to issues we still face today.

**36. Affordances in Video Games: a Study of Perspective**  
**ANA OCASIO: Psychological Science, Psychology, Arts and Sciences; FACULTY MENTOR: Eliah White; POSTER PRESENTATION**

Within the realm of video game research, affordances are perceived opportunities for action within the game. Previous research on visual perspective has discovered

that point of view and perceived affordances affect overall gameplay. This study investigates the impact of point of view (POV) during video game play on eye movements, and, additionally, if playing a video game in first or third person perspective affects perception of affordances. It is hypothesized that third person POV will have greater variance of fixation for eye movements and will have significant differences on the GUESS scale (measuring player perceptions) for engrossment.

**37. A Fair Cup of Tea**  
**SYDNEY GREGORY: Honors, Visual Communication Design, Arts and Sciences; FACULTY MENTOR: Kimberly Weir; POSTER PRESENTATION**

Tea's high popularity requires a large number of laborers for cultivation and harvesting, especially in Kenya and India. The importance of the lives of those who produce the tea should be just as important as the final cup. Tea farmers, however, face challenges in paying their employees fair wages because of the low and varying price of the tea leaf and the fragility of the tea supply chain. By supporting Fair Trade brands, markets could be stabilized and farmers would be able to improve pay and working conditions, and therefore support the sustainability of the planet and its people.

**38. Synthesis and Mechanism Study of Isocoumarin Analogues**  
**ELIZABETH OSIFALUJO, ANDREW QUILLEN: Chemistry, Biochemistry, Psychology, Arts and Sciences; FACULTY MENTOR: Lili Ma; POSTER PRESENTATION**

Over the summer, isocoumarin compounds were synthesized through domino reactions. During the first half of the summer, the hydrolysis of phenylacetylene to include 18O was explored. The final optimized conditions are CF<sub>3</sub>CH<sub>2</sub>OH and MsOH. The reaction mixture was then microwaved for 120°C for 15 minutes. Using this condition, two 18O labelled isocoumarin compounds were prepared to probe the reaction mechanisms. For the second half of the summer, seven reactions were performed and three heteroaryl isocoumarin compounds were successfully synthesized using the following reaction conditions: 1.1 equivalents of ketone, 1.0 equivalent of heteroaryl, 2.4 equivalents of NaOtBu, toluene and XPhos Pd G4.

**39. Star Formation: Modeling the Loss of Magnetic Support for Dense Cores**  
**KENDRA HERWECK: Mathematics and Statistics, Physics & Mathematics, Arts and Sciences; FACULTY MENTOR: Lisa Holden; POSTER PRESENTATION**

Most stars in our galaxy are formed in giant molecular clouds when dense cores collapse to form protostars. We examine the time period just before the collapse during which the magnetic field diffuses and allows gravity to overtake any remaining magnetic support for the core. Starting with a simplified slab model for a cloud core, we derive a nonlinear diffusion equation and numerically investigate the ambipolar diffusion timeline under different assumptions for the interstellar medium's equation of state.

**40. Developing a Plan to Decrease Central Line Associated Infections in Pediatric Oncology Patients**

**ABIGAIL WELLS: Nursing, Health Professions; FACULTY MENTOR: Jillian Boyle; POSTER PRESENTATION**

Pediatric oncology patients are one of the most susceptible groups to Central Line Associated Infections (CLABSI) due to their immunocompromised state. Previous research has suggested that CLABSI leads to costs upwards of \$70,000 and increases the length of stay in hospitals. I have researched multiple methods that have decreased CLABSI rates nationwide and have accumulated interventions on how nurses can decrease CLABSI. Implementing practices such as daily CHG bathing, CVC maintenance care bundles, and the use of the stop-cock system have been proven successful in decreasing CLABSI. This capstone supplements best care practices to prevent CLABSI in pediatric oncology patients.

**42. The Uncomfortable In-Between: Immigration and Identity**  
**SIRIRUAY METHAKITWARUN: Sociology, Arts and Sciences; FACULTY MENTOR: Kristina Vise; POSTER PRESENTATION**

Each year, approximately one million people emigrate to the United States. About 70% become US citizens. We have the numbers but missing is the insider's perspective of how they see themselves as being an immigrant. Using the method of autobiographical sociology, the author examines her own experiences, immigrating from Thailand at the age of 10, to understand how her identity evolved. The findings show the complexities of cultural identity for immigrants and shed light on the ways in which the cultural identity of immigrant children evolves.



**43. Still Struggling: The Complexities of Immigration and Identity****SIRIRUAY METHAKITWARUN: Sociology, Arts and Sciences; FACULTY MENTOR:** Kristina Vise; POSTER PRESENTATION

In 2016, 43.7 million immigrants resided in the US. Approximately half of these immigrants have gained US citizenship after their arrival. This research seeks to understand how the process of immigrating and changing citizenship affects identity. Using the method of autobiographical sociology and guided by Social Identity theory, the author examines past experiences using a sociological lens in order to examine the process of identity development in a Thai immigrant. This study's findings suggest that immigration influences identity in complex ways. The process of gaining citizenship in a host country influences identity in subtle and unintended ways.

**44. The Impacts of Online Medical Information on Our Trust of Physicians****SIRIRUAY METHAKITWARUN: Sociology, Arts and Sciences; FACULTY MENTOR:** Boni Li; POSTER PRESENTATION

A survey including 985 respondents aged 18 and up was collected in 2018. The purpose is to study the impacts of online medical information on our trust of physicians. The survey analyzes the participants' demographic background and their online medical search activities. Findings indicate the differences in education, income, and age have different attitudes towards searching online for medical information. The survey suggests that our trusts in physicians are still strong. As more people are using online medical information, the accuracy of the contents soon needs to be carefully examined in order to provide us an up-to-date professional knowledge.

**45. Chemistry and Biochemistry Freshman Research Scholars: Exploring Opportunities and Connecting with the Department****ANNA ASKREN, ELISE BEZOLD, RAMEY HENSLEY, JANEY VANDEGRIFT, MICHAELA VOGEL: Chemistry & Biochemistry, Arts and Sciences; FACULTY MENTORS:** Keith Walters, Michael Guy, Molly Hopper, K.C. Russell, and Catie Shelton; POSTER PRESENTATION

The NKU Department of Chemistry and Biochemistry is in its second year of this program. A small group of incoming students to the department spend their first year exploring research opportunities and participating in the work of our faculty-led groups. In the fall, scholars rotated through three different research groups to observe different aspects of our discipline. The scholars are then matched with faculty mentors in the spring to join their research groups and make contributions to ongoing projects. This poster documents the experiences of these students during this academic year, including an overview of their spring research activities.

**46. Investigating the Diffusion Behavior of Analytes Subjected Peak Parking Capillary Electrophoresis****LAUREN RIGG: Chemistry, Arts and Sciences; FACULTY MENTOR:** Charalisa Daniels; POSTER PRESENTATION

This investigation utilized Capillary Electrophoresis (CE) in order to observe the diffusion behavior of several different species of analytes through an open capillary. The focus of the trials was to determine the diffusion coefficients of the analytes being analyzed. The peak parking method was utilized. This method pauses the advance of the species in the open capillary for specified amounts of time. A series of uninterrupted trials served as a baseline for each species, to help understand the unmanipulated behavior. Subsequent trials of 0.1, 15, 30, 45, 60, and 75-minute pauses were administered on each analyte and recorded for analysis. A 75:25 acetonitrile:Tris solution served as the mobile phase. Future experiments include the use of polymeric stationary phases to perform further testing on how the diffusion of the analytes in the present study changes as a result of modification from CE to Capillary Electrochromatography.

**47. An Investigation on the Effects of Various Buffers and Parameters on the Structure and Behavior of Stimuli-Responsive Polymers****MADISYN HAYES, ERIC MILNER: Chemistry, Biology, Arts and Sciences; FACULTY MENTOR:** Charalisa Daniels; POSTER PRESENTATION

The goal of this investigation was to determine the ratio of components, the respective concentrations, and the conditions necessary to produce a malleable solid polymer with 70-75% dimethylaminoethyl-methacrylate (DMAEMA) using propanol as the porogen. The DMAEMA was crosslinked with styrene. The primary component under scrutiny for these polymers was the sodium phosphate buffer. It was thought that the 5mM dibasic sodium phosphate ( $\text{Na}_2\text{HPO}_4$ ) buffer be best

for these polymers, but it produced inconsistent results, often not polymerizing at all. To address this, the buffer concentration was adjusted to 2.5mM. Trials were run using both the dibasic and monobasic ( $\text{NaH}_2\text{PO}_4$ ) sodium.

**48. Revision of Standard Operating Procedures for a Hospital Based Infectious Disease Response Team****MONICA MEIER: Nursing, DNP, Health Professions; FACULTY MENTOR:** Lynne Zajac; POSTER PRESENTATION

The purpose of this project is to determine the need to revise the current standard operating procedures (SOPS) for a hospital based infectious disease response team (IDRT). The project involves the review of current standards of procedure, addition of missing recommendations, and update of existing standards to improve team preparedness. The impetus for the project is the gaps identified in December 2017 during the IDRT statewide transport disaster drill. As a result, updates and recommendations will be made based on an assessment of the team's response to hospital wide drills during the fourth quarter of 2018 and first quarter of 2019.

**49. The Effects of Plants on Students' Stress****MOLLY WEIGEL: Psychology, Honors Capstone, Business; FACULTY MENTOR:** Jennifer Sharp; ORAL PRESENTATION

Research suggests that nature has positive effects on the body's senses. In addition, interaction with nature has been linked with physiological, mental, and social benefits. In an effort to develop an understanding of factors that could minimize stress and create a better learning environment for students, nature was brought to the classroom. The results of this study are analyzed and presented alongside a rationale for incorporating more nature into daily life.

**51. Cosmological Models with Acceleration****DYLAN LEVSEY: Physics, Arts and Sciences; FACULTY MENTOR:** Sharmanthie Fernando; POSTER PRESENTATION

In this research, we studied cosmological models to describe the large scale structure of the universe. We studied two models as case studies which describe acceleration. Here we studied various properties of the model such as the Hubble constant  $H(t)$  and the scale factor  $a(t)$ . Hubble constant is related to the velocity of galaxies  $v$  and the distance to them  $d$  as  $v = H_0(t) d$ . The scale factor described the expansion of the universe. We will present various properties of the universe such as  $a(t)$ ,  $H(t)$ , pressure and density of the universe.

**52. Consequences of Depression on Academic Achievement****SAMANTHA LOGAN: Social Work, Education and Human Services; FACULTY MENTORS:** Kathryn O'Donnell, Caroline Macke; POSTER PRESENTATION

Depression is a wide-spread social problem that impacts multiple levels of functioning including; physical health, work or academic achievement, and social functioning. This study was designed to determine the extent that depression impacts NKU students' academic achievement. In light of the prevalence of depression among college students, it is important to examine the impact of depression among NKU students. Information was gathered by surveying 277 NKU students at the Student Union. It is expected that depression will negatively impact academic achievement. This research will help social workers better understand the consequences of depression on academic achievement.

**53. Food for Thought****SHANNON CLIFTON: Social Work, Health Professions; FACULTY MENTOR:** Suk-hee Kim; POSTER PRESENTATION

For millions of Americans, food insecurity is growing increasingly prevalent throughout the United States. College students are also susceptible to becoming food insecure as they often lack sufficient financial resources. The purpose of this study is to determine how prevalent food insecurity is among the college student body and is the occurrence different based on race or ethnicity. This mixed method study will be conducted using a face-to-face self-reported survey in spring 2019. The results of this study are expected to find that student's race/ethnicity plays a role in the likelihood of experiencing poor food security.

**54. Adverse Childhood Experiences among College Students and Academic Success on Campus****ARIL DEFALCO: Counseling, Social Work and Leadership, Education and Human Services; FACULTY MENTOR:** Suk-Hee Kim; POSTER PRESENTATION

College retention rate is a concern in the Kentucky region. Northern Kentucky

University remains second in having the lowest retention and graduation rates when compared to seven other universities in Kentucky. There have been several theories on why, but there is very little evidence on Adverse Childhood Experiences (ACE) among college students. The purpose of the study is to determine how prevalent ACE is among college students. This cross-sectional study expects to find a

#### 55. A Hideous Progeny: Sublime Masculinity and Performativity in *Frankenstein*

**RACHEL SZEMORE: English, Arts and Sciences; FACULTY MENTOR: Tonya Krouse; ORAL PRESENTATION**

Many scholars focus on the role of women in Mary Shelley's *Frankenstein*, but they often neglect the novel's representation of men and of masculinity a dangerous force. Romantic theories of the sublime illuminate Shelley's view of masculinity, which she believed to be deadly. In this, Shelley anticipates current theories of gender performativity, which oftentimes reveal the dangers of toxic masculinity. This study looks in particular at Victor Frankenstein and the Creature, who strive toward the masculine ideal of sublime transcendence and who ultimately perish in the attempt, an entirely original approach to this classic novel.

#### 56. Petting Away Exam Stress in College Students

**KELSEY KAHMANN: Nursing, Honors Capstone, Health Professions; FACULTY MENTOR: Karen O'Connell; POSTER PRESENTATION**

The purpose of this project was to determine if interacting with therapy dogs decreases immediate stress levels in college students. College students experience high stress especially during exams. Therapy dogs provide comfort and relaxation to people of any age, are relatively inexpensive, and easy to get on college campuses. Pre and post-level stress was assessed using a zero to ten visual analog scale along with questions on pet ownership and time spent with the dogs during finals week. The results show a statistically significant decrease in self-assessed stress scores. The recommendation is to continue having dogs during finals week.

#### 57. A Relationship Between Parental Alcohol Abuse and Psychological Disorders including Substance Abuse in Young Adults

**VICTORIA VOSS: Honors, Honors Capstone, Health Professions; FACULTY MENTOR: Karen O'Connell; POSTER PRESENTATION**

Studies support the occurrence of psychological disorders related to the home environment of children. It is suggested that if parents abuse alcohol and drugs, the children living with them are at increased risk of psychological disorders, especially substance abuse. Students from four different colleges at a university were recruited. This study explored demographics, college major and parental alcohol abuse history related to the occurrence of psychological disorders and substance abuse in young adults. In the current opioid epidemic, it is important to examine the influence of parental behavior on children's formative years and later choices.

#### 58. Use of the Biodex Biosway to Assess Alcohol- Induced Impairments of Balance and Coordination

**RACHEL MOSS, MEGAN BOSMA: Psychological Science, Arts and Sciences; FACULTY MENTOR: Cecile Marcinski; POSTER PRESENTATION**

Detection of motor impairment is widely used as an indicator of probable alcohol intoxication (e.g., the police standardized field sobriety test). However, most testing is imprecise and does not use automated technology. The purpose of this study was to examine the acute effects of alcohol on balance impairments as measured by the Biodex Biosway Portable Balance System. Using a within-subjects study design (n=20), the results indicated that body sway increased and limits of stability decreased in a dose-dependent manner. Therefore, this new technology may be of interest to alcohol researchers as a more precise assessment of gross motor control.

#### 59. Mechanical Properties of 3D Printed Steel

**MIGUEL ORTIZ REJON: Mechanical Engineering Technology, Arts and Sciences; FACULTY MENTORS: Seyed M Allameh, Roger Miller; ORAL PRESENTATION**

An in-house developed 3D printer was used to conduct 3D welding of steel on ceramics. Since the heat dissipation may vary with direction, the homogeneity and the mechanical properties of the printed bead may be different in the directions of thickness, depth and length. To investigate this variation, dog-bone shaped micro-scale samples were extracted by CNC milling from the welded bead in the x, y and z directions. Samples were mounted onto the jaws of a micro-tester and tensile tests

were conducted. Results and their implications on 3D printed rebars on concrete are discussed here.

#### 60. The Relationship between Ambient Temperature and the Incubation Behavior of Female Eastern Bluebirds

**KEVIN BLACK: Biological Sciences, Environmental Science, Arts and Sciences; FACULTY MENTOR: Lindsey Walters; POSTER PRESENTATION**

Temperature plays an integral role in the development of bird embryos, and so must be regulated by a nesting parent. This research aimed to determine how ambient temperature affects nest attentiveness in Eastern bluebird (*Sialia sialis*) females. We recorded the number and duration of female incubation off-bouts in 11 nest boxes and measured the ambient temperature for each individual off-bout. We found that as temperature increased, female Eastern bluebirds left the nest less frequently but for a longer duration. In warm temperatures, incubating females were able to spend more time meeting their own energetic needs before returning to the nest.

#### 61. Understanding Interactive Narrative

**ZACHARY O'BANION: English, Honors Capstone, Arts and Sciences; FACULTY MENTOR: Jennifer Cellio; ORAL PRESENTATION**

Video games and gaming have enjoyed a steady rise popularity and presence in mainstream culture. They have also challenged how narrative can be defined and analyzed. However, academic narrative studies have largely excluded these interactive mediums. In my presentation, I will convey the importance of video games when it comes to the study of narratology. Though gaming reflects aspects of cinematic and written narratology, the narratology of video games highlight how interactivity can grant a broader range of emotional investment for users. When we ignore this medium, we miss out on opportunities to better educate our students and learn about an ever-increasing form of storytelling.

#### 62. Micro Loans for Macro Problems

**MIKAELA HALL: Political Science, International Studies, Arts and Sciences; FACULTY MENTOR: Kimberly Weir; POSTER PRESENTATION**

The poorest people in the world struggle to make ends meet, relying on whatever food they can grow, fish they can catch, or raw materials they can collect to earn a living. Dependence on such limited resources that are subject to volatile market shifts leaves many people in a state of perpetual underdevelopment. This is where microfinance programs (MFI) come in, offering opportunities for individuals, families, and even communities to "jump start" businesses or projects to improve their standard of living. But in development, nothing is ever simple or straightforward, so I will examine the benefits and shortcomings of MFI.

#### 63. Water Deposits Connection to Decreased Evidence of Burial Practices in Iron Age Britain and Ireland

**AMANDA ANDREWS: Anthropology and Communication Studies, Arts and Sciences; FACULTY MENTOR: Michael Simonton; ORAL PRESENTATION**

A characteristic of Iron Age Britain and Ireland is a lack of burial evidence, leading some to argue in favor of water deposition to account for the missing population. This study will investigate the strength of this argument through a cross-cultural comparison with Viking and modern-day Hindu burial practices to analyze the ideological significance of watery contexts. In addition, this study will explore the ideological significance of Iron Age bog bodies to provide further context to water deposits. In this study of water deposition and liminality, practices will be focused on to aid in the hypothesis of Iron Age cultures interring cremated remains as a semblance of ritualistic and religious.

#### 64. A Case Study in Archaeological Databases from a Computer Science Perspective: Examining the Data Dilemma

**CLAYTON JOHNSON: Honors, Archaeology, Computer Science, Honors Capstone, Informatics; FACULTY MENTOR: Judy Voelker; POSTER PRESENTATION**

Archaeologists face a data dilemma within their field. Massive amounts of data need to be accurately stored and retrievable for research. Often though a database may become obsolete or fails to fulfill the needs of end users. This project deals with a dataset of small finds in Thailand and chronicles the entire process of database design, implementation, and maintenance. Unlike most archaeological databases, the process will be done through the lens of computer science. Ultimately, this project is intended to serve as an example for archaeologists wanting to implement a database of their own and current best practices to follow.

**73. An Analysis of the Common Core State Standards****JACKSON COATES: Honors, Middle Grades Education, Education and Human Services;** FACULTY MENTOR: Tonya Krouse; ORAL PRESENTATION

The purpose of this research was to determine if the Common Core State Standards are negatively or positively affecting American education. Using existing literature on the topic and first-hand teacher interviews, this investigation concludes that Common Core State Standards are a failure due to overwhelmingly poor public perception of the standards and standardized test-based teacher evaluations. By analyzing the public's perception of Common Core focusing on Ohio middle grades education, the key flaws in Common Core State Standards will be identified and discussed, and a realistic solution will be proposed.

**74. GIS Spatial Analyses of Wind and Solar Energy****ARIEL JOHNSON: Environmental Science, Arts and Sciences;** FACULTY MENTOR: Hongmei Wang; POSTER PRESENTATION

Renewable energy compared to non-renewable energy is cleaner for the environment. There are previous studies on renewable energy in the US, however, they were not examining the spatial patterns of the data, only the energy potential in an area. Spatial patterns are valuable to examine. The objective of this study is to complete spatial pattern analyses of the US renewable energy with focus on wind and solar energy. The analysis results show that solar is highly geographically dependent while wind is highly variable. The importance of this study is to have analyses available for possible growth in this industry.

**75. The Ecovillage Alternative****MALLORY EILERMAN: Honors, Arts and Sciences;** FACULTY MENTOR: Kimberly Weir; POSTER PRESENTATION

One response to the growing problem of overconsumption and unsustainable lifestyles is the ecovillage movement. This phenomenon consists of people working toward reducing their ecological footprint while changing their fundamental relationship with nature and consumption. Ecovillages center on reconsidering value systems and lifestyles. An ecovillage is an intentional or traditional space that is consciously designed and rooted in local processes to have a whole systems approach to sustainability through four dimensions (ecological, social, cultural, and economic). This research explores the ecovillage movement to consider its potential for achieving global sustainability.

**76. Living More than the Minimum****MADISON SAYATOVIC: Honors, Biology, Arts and Sciences;** FACULTY MENTOR: Tonya Krouse; ORAL PRESENTATION

I have chosen to explore the social climate of the current minimum wage and the effect the installment of a livable wage standard throughout the United States could have. I plan to draw from disciplines such as law, sociology, public policy, psychology, and business. Although minimum wage varies between each state in America, one thing these earnings have in common is that they incredibly low. I believe that every person deserves shelter, food, water, and clothing. The installment of a mandatory livable wage would not only enable workers to meet these basic necessities, but also achieve a decent living.

**77. Charged black holes as heat engines****EMILY FRAME: Physics, Arts and Sciences;** FACULTY MENTOR: Sharmanthie Fernando; POSTER PRESENTATION

This project is a case study of thermodynamics of a charged black hole. The black hole is obtained by combining non-linear electrodynamics to gravity. Thermodynamic properties that were focused are pressure, temperature, Gibbs free energy, and specific heat. Since the first law is well defined for this black hole, we have studied how it could be used as a heat engine. In this context, we have computed the efficiency for a thermodynamical cycle which has two isochoric and two isobaric paths. We have also computed the Carnot efficiency for the black hole heat engine.

**78. Saving the World with Solar Energy****ASHLEE TAYLOR: Honors, Biology, Arts and Sciences;** FACULTY MENTOR: Kimberly Weir; POSTER PRESENTATION

Fossil fuels are powering the world. Many countries' use resembles that of the United States, which is heavily dependent on fossil fuels. With ominous predictions about depleting resources (like the world's oil supply being exhausted within the next 30 or so years), it is time to get serious about alternative sustainable energy.

With less than 10% derived from renewable sources, solar power has the potential to become the world's main energy supplier. My project considers the benefits and disadvantages of solar power as a renewable energy resource that may be friendlier to people and the planet.

**79. Virginia Woolf's Feminism vs. Feminism Today****ANNA CAMELE: English;** FACULTY MENTOR: Tonya Krouse; ORAL PRESENTATION

In the polemical *Three Guineas*, Virginia Woolf purports to answer a question about going to war. While she answers that question (she objects to patriarchy's emphasis on violence and competition), she also discusses women's places in education and the workplace. Woolf's comments resonate today because the fight for women's rights is still happening today. We have leaders like Emma Watson, who started her own #HeForShe campaign to ask men to be allies for women. While we have modern feminist leaders, we can use *Three Guineas* to understand the progress women have made, but also what still needs to be done.

**80. Food Security Issues: The Need for Awareness of Food Resources at NKU****MADISON BALLARD: Social Work, Education and Human Services;** FACULTY MENTOR: Suk-hee Kim; POSTER PRESENTATION

Research has found that college students around the globe are experiencing food insecurity. The purpose of this study is to find out whether or not students are aware of resources on- and off-campus they can utilize to help combat food insecurity. As a result of the findings, the study will implement better strategies to bring awareness to resources, such as FUEL NKU, to potentially help student retention and graduation rates at Northern Kentucky University.

**81. Puzzler: A Programming Language for 2D Puzzle Games****ALEX OWENS: Computer Science, Honors Capstone, Informatics;** FACULTY MENTOR: Jeffrey Ward; ORAL PRESENTATION

Most popular computer programming languages are designed for implementing a wide array of applications, and are consequently very complex. Conversely, Domain Specific Languages (DSLs) are much smaller languages designed to make creating one type of application easy. Puzzler is a DSL that streamlines, for both programmers and non-programmers, the creation of 2D puzzle games. Non-programmers can use it without learning a more complex, general language. Puzzler is implemented in the Racket programming language, a current Lisp dialect with a great deal of direct support for DSL creation.

**82. Trauma Impacts on Mental Health among College Students on Campus****MINDI DOOLIN: Social Work, Health Professions;** FACULTY MENTOR: Suk-hee Kim; POSTER PRESENTATION

Trauma is an autonomous experience which impacts an individual's mental health and their relationships with family, friends, and at work. Studies done across United States college campuses indicate that many students report traumatic life events. However, very little is known to date about trauma impacts on mental health among college students on campus. In an effort to bridge this gap, the current study seeks to provide insight into the relationship between student Adverse Childhood Experiences (ACEs) scores and their use of mental health service available through college campus. The results will inform existing mental health services for their college students.

**83. Binge Drinking and Its Negative Impact on NKU Students****GAIL V. MERKLE: Social Work, Education and Human Services;** FACULTY MENTORS: Reiko Ozaki, Jessica Averitt Taylor; POSTER PRESENTATION

Binge drinking by university students is a national, social, and public health issue. Binge drinking is described as a male having five or more alcohol-based drinks and a female having four or more alcohol-based drinks in a two-hour period. Binge drinking can impact academic functioning, mental health, and have unintended and intentional injuries. This study aims to discover if there is a problem with binge drinking among NKU students. An anonymous 31-question survey will be administered to a random 100 NKU students. The findings will ascertain if there is a need for an increase in alcohol abuse education on campus.

**84. Postural Differences between Students and Faculty/Staff****MAX SCHROEDER, DEBRA RUETER, DANIEL CANNOY, ASHLEY HOFF, JOE PFIESTER: Athletic Training, Education and Human Services;** FACULTY MENTOR: Rachele Vogelpohl; POSTER PRESENTATION

Postural deviations, especially in the scapula and spine tend to occur from



extended periods of sitting, unequal lifting of heavy loads, and learned behaviors. Both students and faculty/staff may be exposed to these risk factors due to the demands of the faculty/staff and student. The purpose of the study is to assess posture of both students and faculty by performing a bio-mechanical analysis to determine if scapular and pelvic position differ between the groups.

#### 85. Applying Context to Handwritten Character Recognition

**STEVE BROWNFIELD: Computer Science, Informatics;** FACULTY MENTOR: Richard Fox; POSTER PRESENTATION

Today's approaches to automate handwritten character recognition utilize various forms of machine learning and while they are, at times, highly accurate, they do not attempt to apply higher-level knowledge to improve performance. This research employs support vector machine (SVM) trained recognizers supplemented with domain knowledge to provide top-down guidance in an attempt to improve recognition accuracy. Results showed SVM recognition alone only provided 60-69% accuracy. With top-down guidance however, accuracy improved to 99.3-99.9%. Modern business uses of smartphones and other camera enabled devices amplify the need for 100% accurate character recognition. This approach brings us closer to that goal.

#### 86. Effects of Nutrition on Quadriceps Force Production

**MACKENZIE KNAPP, OLIVIA CARVER, TYLER GARRISON, SAMANTHA PERKINS, ALLISON KAELEN: Athletic Training, Education and Human Services;** FACULTY MENTOR: Rachele Vogelpohl; POSTER PRESENTATION

Eating habits, fad diets, and nutrition are hot topics of conversation among the physically active. Much of the information available is inconclusive or contradictory. The purpose of this study is to examine the effects of fasting on quadriceps strength in physically active females. Quadriceps strength will be assessed using an isokinetic dynamometer following a fasting period and following a meal to determine if a pre workout meal effects force production.

#### 87. Joint Mobilization versus Standard Stretching Techniques to Improve Range of Motion in the Shoulder

**BROOKE ZISKA, DARION WILLIAMS, JACOB PARKER, SARAH SCHNIEDERS: Athletic Training, Education and Human Services;** FACULTY MENTOR: Rachele Vogelpohl; POSTER PRESENTATION

Rotational deficits at the glenohumeral joint are a common problem within the physically active population and can lead to the development of injury. There are multiple ways to counteract the loss of rotational movement, ranging from standard stretching programs to joint mobilization techniques. Whether it is targeting the musculature or focusing on the joint capsule, each method is used to achieve a common goal. The purpose of this study is to assess the difference in range of motion of the shoulder after using grade 4 joint mobilization versus using a standard stretching program.

#### 88. Medical Malpractice Reform: A Research Study on Repeat Offenders within Kentucky's Healthcare System

**RACHEL PIPES: Medical Malpractice Law, English, Arts and Sciences;** FACULTY MENTOR: Andrea Gazzaniga; POSTER PRESENTATION

Although tort reform is constantly in flux, there are some aspects of our healthcare system that have yet to be addressed. An issue that has not received as much attention is that of repeat offenders within the medical malpractice realm. This research project consisted of observing the pros and cons of reforming medical malpractice law and determining whether or not it needs to be adjusted, specifically in terms of repeat offenders. I approached this issue through legal and field research and determined that repeat offenders within our healthcare system were in fact being overlooked.

#### 89. Instrumentation of a 3D Printer for Building Construction Components

**ABDULLAH ALMUZAINI: Physics, Geology and Engineering Technology, Electronic Engineer Technology, Arts and Sciences;** FACULTY MENTORS: Seyed Allameh, Roger Miller; POSTER PRESENTATION

A 3D printer developed at NKU is equipped with a grout pump for the fabrication of structural components. The work includes the modification of the printer to accommodate the grout transport system. The work included pressurizing the pump's hopper, resurfacing the hopper with Teflon coating, and incorporating electronics needed to turn the pump on and off during structural deposition. The 3D printing of homes has already been welcomed by Messer Construction



who visited NKU and appreciated the effort. They invited NKU faculty to their headquarter and requested collaboration. The instrumentation of the pump allows such collaboration.

#### **90. Consent in the Eye of the Beholder: Variation in Definitions of Sexual Consent among Older Adults**

**VIVIANE JOHNSON: Psychological Science, Psychology, Arts and Sciences;** FACULTY MENTOR: Allyson Graf; POSTER PRESENTATION

Sexual violence occurs at any age, yet education on consent typically targets youth. This project aimed to understand how sexual consent is conceptualized among older adults and what, if any, deficiencies need addressed. In a survey ( $N = 200$ ), participants were asked to define consent and complete a measure on the appropriateness of giving and receiving consent. More than half (60%) of participants supplied incomplete definitions of sexual consent. There was also a significant difference in attitudes on consent between those holding accurate and inaccurate definitions. These findings suggest the importance of addressing sexual consent among sexually-active older adults.

#### **91. Effects of Developmental and Adult Antipsychotic Administration on Dendritic Structure**

**TARYN TAUGHER, EMILY LOHMANN, EMILY BALTES-THOMPSON: Behavioral Neuroscience/Pharmacology, Psychology, Arts and Sciences;** FACULTY MENTOR: Mark Bardgett; POSTER PRESENTATION

This study explored the effects of chronic antipsychotic administration during development or adulthood on dendritic architecture within the parietal cortex of rats. Maximal dendritic branching was greater in rats that received antipsychotics early in life but was lower in those that received antipsychotics during adulthood.

#### **92. The Effects of Non-manual Postural Restoration Techniques on Patients with Nonspecific Chronic Low Back Pain**

**ERIC PHILLIPS, LOGAN DECKER, AARON BELONGIA, PAYTON AZBELL: Athletic Training, Education and Human Services;** FACULTY MENTOR: Rachele Vogelpohl; POSTER PRESENTATION

Chronic low back pain is experienced by nearly 80 percent of adults in their lifetime. It is the leading contributor to missed work days and the most common cause of job-related disability. Athletes and certain occupations are at greater risk of injury due to physical activity. Many muscles are used for postural stabilization and respiration. Postural breathing exercises may help realign posture and increase breathing efficiency. Correcting muscular imbalances may restore flexibility and reduce pain. The purpose of this study is to investigate the effects of non-manual postural restoration techniques on subjects with nonspecific chronic low back pain.

#### **93. Analysis of Torque at the Elbow in Different Baseball Pitches**

**ADAM POWELL, PAYTON NAYLOR, KATELYN GATES, ASHLEE GARCIA, EMILY GARDNER: Athletic Training, Education and Human Services;** FACULTY MENTOR: Rachele Vogelpohl; POSTER PRESENTATION

Due to increased force on the elbow that occurs during overhead throwing, baseball pitchers are very susceptible to injury. These injuries could include ulnar collateral ligament sprains/tears, bone spurs, or tendinopathy. Research has shown that of all the pitches thrown, the fastball produces the greatest amount of torque at the elbow. The purpose of this study is to analyze pitching mechanics and torque at the elbow in collegiate baseball pitchers when throwing different types of pitches. This analysis will provide information on how injuries occur and how they can be treated or prevented through proper throwing mechanics.

#### **94. The Impact of Social Media on Mental Health**

**SARAH LOWE: Social Work;** FACULTY MENTORS: Suk-hee Kim, David Wilkerson; POSTER PRESENTATION

Does social media usage impact us more than we realize? Previous studies have demonstrated that college students spend large portions of time on social media, while unknowingly impacting their self-esteem and mental health as a whole. The purpose of this study is to examine the impact of social media on mental health, specifically self-esteem. This study will include a survey sample of college students. The results of this study are expected to report a correlation between social media usage and negative effects on mental health.

#### **95. Togo, Africa: On Track for Over 3°C of warming by 2100**

**JACOB ENGLERT: Mathematics and Statistics, Arts and Sciences;** FACULTY

MENTOR: Andrew Long; POSTER PRESENTATION

The West African nation of Togo has experienced rapidly rising temperatures in recent history. Rising temperatures have disastrous implications for the agriculture, public health, and economy of Togo. We have constructed a regression model that captures the annual increase in temperature for all of Togo, based on data collected in the various geographic regions of Togo since 1961. Singular Spectrum Analysis is used to identify and thus incorporate seasonal fluctuations that align with known climatological phenomena into the model, permitting us to isolate the underlying increasing trend - a trend that suggests over 3°C of warming by the year 2100.

#### **96. Analyzing Outcomes of Non-Deterministic Events in Fluctuating Temporal Data**

**JACOB ENGLERT: Statistics, Mathematics and Statistics, Arts and Sciences;** FACULTY MENTOR: Joseph Nolan; POSTER PRESENTATION

Statisticians often look to examine changes after a designated event of interest occurs. It is often the case that such an event eludes experimental control and must also be examined within the context of time. Analytic techniques must reflect the need to evaluate data where such events occur asynchronously in a non-deterministic fashion. In addition, hidden underlying temporal trends add substantial complexity. This research describes the methodology underlying a case study which incorporates a unique solution used to address data containing both an underlying trend over time and a pseudo-randomly occurring event in time.

#### **97. Amazon Elastic Container Service (ECS)**

**MONIKA PRADHAN: Computer Information Technology, Informatics;** FACULTY MENTOR: Wei Hao; POSTER PRESENTATION

This project is about setting up a cluster with fargate technology that can be used with Amazon ECS (Elastic Container Service) to run containers without managing servers or clusters of Amazon EC2 instances. The Amazon ECS creates a task definition that uses fargate launch type, schedules task and configure the cluster in the Amazon ECS. It is also about the detailed study of advantages container has over VM based on the parameters such as density, speed, low management overhead and portability. It also includes the experiments performed to prove the container benefits over VM based on use cases suitable for both.

#### **98. Brace for Negative Impacts: Social Media's Effects on Students at Northern Kentucky University**

**MATTHEW GRAY: Master's of Social Work, Education and Human Services;** FACULTY MENTOR: Reiko Ozaki, Jessica Averitt Taylor; POSTER PRESENTATION

Social networking is globally encompassing with advancements in cell phones and worldwide internet availability. Previous studies have shown that social media often causes depression, addiction, and poor academic outcomes. This study will investigate the effects of social media on students at Northern Kentucky University. This survey study of 100 Northern Kentucky University students is intended to examine the prevalence of social media use, social media addiction, academic outcomes, and possible implementation programs that could address the adverse consequences related to social media use. These findings will inform the university about the effects of social media on students.

#### **99. Food Insecurity at NKU**

**RACHEL HALLER: Social Work, Education and Human Services;** FACULTY MENTORS: Caroline Macke, Kathryn O'Donnell; POSTER PRESENTATION

Research shows that food insecurity on college campuses is higher than the national average of 12.7% (Henry, 2017). Paying for tuition and other school-related costs may leave students struggling to afford basic groceries. This can lead to many consequences, including a decline in student retention. The purpose of this study is to determine whether NKU students know about and/or seek support from the on-campus food pantry. Methodology: an IRB approved study utilizing a cross-sectional survey design purposive sampling. The results will help inform NKU in their processes of approaching food insecurity services and the level of need on campus.

#### **100. Attitude towards Older Adults among NKU students**

**OLADELE OGUNDIRAN: Social Work, Education and Human Services;** FACULTY MENTOR: Reiko Ozaki, Jessica Taylor; POSTER PRESENTATION

Previous studies show that it is common for college students to be rude to older adults and suggest that the ageist attitudes should be challenged. The purpose of this study is to evaluate the attitudes of NKU students toward older adults. This



study will use Kogan's Attitude towards Old Peoples Scale to collect data from 100 students at NKU. This study expects to find that the attitude of NKU students toward older people is mostly negative as stated in the literature. Results from this study can be used to encourage NKU students to reflect on their own views of aging.

#### 101. The Degradation of the Small Farm and its Transnational Effects

**KATHLEEN BRYANT: Honors, Social Work, Education and Human Services;**

**FACULTY MENTOR:** Tonya Krouse; **ORAL PRESENTATION**

Small farms around the world are dwindling in size, numbers, and economic standing. Their loss (and subsequent replacement by corporate farms) is felt by the world as the root of transnational concerns such as immigration, poverty, and environmental destruction. This research investigates the causes of the problem and examines its relationship to a few global issues. The research traces the source to the globalized capitalist ideology which values money and power over land and community. The descriptions of the solutions compiled in this project range from local to systemic, and many are being already implemented by small farmers.

#### 102. Food vs. Fuel: Biomass in Developing Countries

**JENNA CROWELL: Honors, International Studies, Arts and Sciences;**

**FACULTY MENTOR:** Kimberly Weir; **POSTER PRESENTATION**

The use and supply of sustainable energy is one of the main challenges facing humankind. Biomass has the potential to offer substantial contributions for meeting energy demands in a sustainable way. Biomass is already the most important source of energy in many developing countries due to its availability, and there is growing discussion of its potential for use in modern industries. This project considers the benefits of using biomass, from its easy implementation to eliminating pollution, as well as the drawbacks, such as its potential of leading to competition for land use and crowding out food production.

#### 103. Dirty Fashion

**LYDIA ERICKSON: Honors, Psychology, Arts and Sciences;**

**FACULTY MENTOR:** Kimberly Weir; **POSTER PRESENTATION**

In a society consumed with constantly acquiring more and obsessed with appearance, it is no wonder retailers must battle to become the consumer's first choice. The obsession for trendy clothes has created a new, but dangerous mode of fashion. In the realm of fast fashion, companies rapidly produce cheap clothing in order to keep up with the latest trends. But at what cost? This competition does not come without causing devastating consequences to both the environment and humanity.

#### 104. The Prevalence of Stress among NKU Students

**KATHERINE MANNING: Social Work, Education and Human Services;**

**FACULTY MENTORS:** Suk-hee Kim, David Wilkerson; **POSTER PRESENTATION**

Previous research has found that students in higher education tend to experience high levels of stress due to the academic and other demands of university life. This stress manifests itself physically, mentally, or emotionally. This study attempts to identify what proportion of NKU students report some form of stress. Survey data is expected to indicate a high incidence of stress among subjects surveyed.

#### 105. Alcohol Use and Neglecting School Obligations

**MARIAH HIATT: Social Work, Education and Human Services;**

**FACULTY MENTORS:** Suk-hee Kim, David Wilkerson; **POSTER PRESENTATION**

Previous research confirms that substance use is prevalent among college students in the U.S. The current research has discovered that alcohol use can impact academic responsibilities. This cross-sectional study examines the alcohol use among 106 university students and its interference with school obligations. It is anticipated the findings will identify alcohol use reported by subjects as a reason for neglecting school obligations.

#### 106. Sustainably Nuclear?

**DAKOTA LANGHALS: Honors, Economics/Mathematics, Business;**

**FACULTY MENTOR:** Kimberly Weir; **POSTER PRESENTATION**

Nuclear energy is a hotly contested topic. One side of the debate argues that it offers a promising means of meeting our energy demands without accelerating climate change. Critics worry about difficulties managing nuclear waste, disasters at nuclear plants, and the long-term sustainability of uranium mining. Many countries are moving away from nuclear energy because of disasters at Three Mile Island, Chernobyl and Fukushima. Yet, nuclear power provides a more sustainable energy source than fossil fuels because it does not produce harmful emissions. I explore these topics to present nuclear energy in the context of sustainability.

#### 107. The Living Detective: Sherlock Holmes's One Hundred Thirty Year-Long Case

**SARA LEONHARTSBERGER: English, Honors, Honors Capstone, Arts and**

**Sciences;** **FACULTY MENTOR:** Paige Byam Soliday; **ORAL PRESENTATION**

The Living Detective examines Sherlock Holmes's presence within various media, offering explanations and predictions for his endurance. With 130 years' worth of material, I focus on Doyle's short stories and novels, film adaptations, Sherlockian texts unauthored by Doyle, and Sherlockian audiences. Within Doyle's texts, I



highlight crucial narrative elements, examine adaptations and Sherlockian texts, while analyzing similarities and differences that emerge from these elements. Consulting historical references and scholarly articles, I discover similarities between Victorian and modern audiences that affects Holmesian content. Tying together these analytic threads, I propose elements contributing to Holmes's endurance and predict future Holmesian content.

#### 108. Edge Computing

**JAYLEN JONES, HANNAH CREECH: Computer Science, Informatics; FACULTY MENTOR:** Wei Hao; POSTER PRESENTATION

The goal of the Edge Computing project is to compare the runtimes of the Lambda Management Console, a mobile app, and Edge Computing to try and find that Edge is the software that runs code the fastest and uses the least amount of energy. Edge Computing is a method of allowing applications to be optimized by bringing it closer to the user no matter where the original server is located. For example, if I am located in Ohio and the original program was uploaded from Moscow, the data would still be brought closer to Ohio where it was created to allow for faster runtimes and less energy consumption. If the comparison shows that Edge is faster than the other options, it increases the viability of using Edge at a higher level.

#### 109. Rape Myth Acceptance among NKU Students

**KATIE FOSSETT: Social Work, Education and Human Services; FACULTY MENTOR:** Caroline Macke; POSTER PRESENTATION

Sexual assault is a serious public health issue, especially on college campuses. Rape myths contribute to the prevalence of this social issue. Sexual assault is overlooked/ignored on college campuses and perpetrators have received minimal penalties for it. This paper is to determine rape myth acceptance among NKU students. A brief survey was passed out to NKU Students in the Student Union. We need to further educate our students on rape myth acceptance in the future. This Survey will show that most NKU students are not tolerable towards rape but there are a few who still see it as acceptable.

#### 110. Socioeconomic Status and Graduation Rates among NKU students

**ROBERT WALKER: Social Work, Education and Human Services; FACULTY MENTORS:** Reiko Ozaki, Jessica Taylor; POSTER PRESENTATION

Barriers created by low socioeconomic status (SES) make it difficult for students to graduate. They tend to experience stressors such as poor mental health and lack of support. The purpose of this study is to examine the relationship between SES and graduation rates among NKU students. This study will utilize 100 self-reporting surveys completed by NKU students on campus. It is expected that low SES will correlate with low graduation rates. These findings may provide insights into the experience of NKU students from lower SES backgrounds and their needs for academic success.

#### 111. Analyzing the Accuracy of a 6-Minute Walk Test Equation

**MARISSA FROMMEYER: Kinesiology, Exercise Science, Education and Human Services; FACULTY MENTOR:** Cory Scheadler; POSTER PRESENTATION

A previous study generated an equation to estimate the distance an individual could walk during a 6MWT given height and weight. Purpose: To analyze the accuracy of this equation for a younger population. Methods: A subject sample primarily of <26 years was recruited. Godin scores were calculated for physical activity level. Estimated distance was calculated. A 6MWT was completed. A paired t-test was used to determine differences in walk distances. A Pearson correlation was used to determine if physical activity level was correlated with the accuracy of the estimate by analyzing the walking distance difference scores to the Godin scores.

#### 112. Going "Nuts" for Fair Trade

**KENDAL WEHRLE: Honors, Biology, Arts and Sciences; FACULTY MENTOR:** Kimberly Weir; POSTER PRESENTATION

Nuts are big business, especially important for the producing countries of Brazil, El Salvador, India, Malawi, and Nicaragua. However, farmers struggle to earn a living wage from the nuts they grow. This disparity perpetuates the cycle of poverty that exists in these developing countries. But the fair trade of nuts could alleviate this problem. Proceeds from fair-trade nuts are also used to support community projects and aid in the development of sustainable farming practices. This project aims to raise awareness about this issue and how consumers can contribute by purchasing from companies that rely on fair-trade nuts.

#### 114. Beauty in a Nutshell: Essential Oils of the Cosmetics Industry

**SHAYLA DELAMAR: Honors, International Business, Business; FACULTY MENTOR:** Kimberly Weir; POSTER PRESENTATION

Ever wonder how much work went in to developing your favorite moisturizer? When examining consumption and sustainability, consider the billions of dollars spent every year by consumers to make ourselves look and feel good. But are we aware of the impact that buying cosmetics containing cocoa butter, shea butter, or the increasingly popular argan oil actually has? My project examines how a shift to using fair-trade butters and oils can improve the standard of living of producers and the planet.

#### 115. Suicide Awareness and Prevention among College Student on Campus

**EMMA AVILES: Social Work; FACULTY MENTOR:** Suk-hee Kim; POSTER PRESENTATION

Suicide awareness and prevention are more critical issues than ever on college campuses. The purpose of the study is to examine the prevalence of suicide prevention among college students on campus. Using a self-reported survey, this study also investigates student familiarity with warning signs, resources, and services on college campus. This study used non-probability, purposive sampling to collect data from college students. In understanding the gap on campus can provide better support for their students. The findings will inform the efforts to educate college students about suicide prevention on campus.

#### 116. Prevalence of Marijuana Use Among NKU Students

**MICHELLE HUNGLER: Social Work, Education and Human Services; FACULTY MENTORS:** Suk-Hee Kim, David Wilkerson; POSTER PRESENTATION

College campuses across the United States have reported a rise in marijuana use among students. Additionally, research has demonstrated a relationship between marijuana use and poor academic performance. This study examines the prevalence of marijuana use among Northern Kentucky University students. It is expected that this study will find marijuana use among NKU students is consistent with the prevalence found in previous research.

#### 117. Intimate Partner Violence among NKU Students

**BRUNA SOUZA: Social Work; FACULTY MENTORS:** Reiko Ozaki, Jessica Taylor; POSTER PRESENTATION

Intimate partner violence (IPV) is a serious problem for college students with 21% reporting victimization. The impact of IPV can lead to physical, emotional, social, and academic difficulties for victims while in college. Previous research indicates that victims are less likely to utilize campus resources. This study aims to identify if students impacted by IPV utilized campus services. A self-administered survey will be used to collect data from 100 NKU students. The findings from this study may be used to inform the NKU campus community about students' awareness and utilization of campus resources for IPV victims.

#### 118. The Right to Eat: An Anthropological Approach to Addressing America's Food Exclusivity among American Families Experiencing Poverty

**LYNDSEY MCNABB: Anthropology, Arts and Sciences; FACULTY MENTOR:** Sharyn Jones; POSTER PRESENTATION

My work explores access to fresh produce among families experiencing poverty, or those receiving food assistance. I used ethnographic methods and interviewed low-income single parents living in Boone, Kenton, and Campbell County. I collected qualitative and quantitative data to describe the characteristics of people in a food crisis. My work identified clear disconnects between the people experiencing a food crisis, the state officials, and county employees that regulate and govern. Moreover, this ethnography gives people experiencing poverty a voice for reform in food assistance programs so that they may provide healthy meals for their families in the future.

#### 119. Borderline Personality Disorder and NKU Students

**DOUGLAS KING: Social Work, Education and Human Services; FACULTY MENTORS:** Reiko Ozaki, Jessica Taylor; POSTER PRESENTATION

Borderline Personality Disorder (BPD), which involves chronic mood instability and unstable relationships, can be destructive among college students. Patients often cope with BPD through self-harm, aggressiveness, and substance abuse. This research examines the prevalence of BPD symptoms among NKU students and their effects on quality of life. 100 NKU students were surveyed using the Borderline Symptom List and the Satisfaction with Life Scale. Results are expected



to show that NKU students have high rates of BPD symptoms, which negatively impact quality of life. This project will contribute to the underdeveloped body of knowledge regarding personality disorders among college students.

#### **120. RNA Sequencing to Investigate the Mechanisms behind the Altered Genome Stability in SAM1 and SAM2 Mutants of *Saccharomyces Cerevisiae*.**

**ZOEY FAY, PRESLEY BRYANT: Biological Sciences, Arts and Sciences; FACULTY MENTOR:** Erin Strome; POSTER PRESENTATION

*Saccharomyces cerevisiae*, the budding yeast, has two genes SAM1 and SAM2, that encode enzymes that function to create the major methyl donor in these cells. Mutations in these genes alter rates of genome stability. In an effort to determine pathways that might be disrupted due to these mutations, and involved in the observed stability changes, we have performed RNA-Seq analysis to determine differential gene expression (DEG). Investigation into these DEGs is ongoing to elucidate what pathways are altered, how this might occur due to methyl cycle mutants, and what is known about the relationship to genome stability.

#### **121. The Dreaded Course: Success in Challenging Coursework**

**JIBRIL MCCAISTER: Social Work, Education and Human Services; FACULTY MENTORS:** Reiko Ozaki, Jessica Taylor; POSTER PRESENTATION

College students often experience courses that they do not look forward to due to its difficulty. There is no sufficient research evidence on how college students deal with difficult coursework. This research aims to examine how students deal with difficult courses, which includes their study habits, use of campus resources, and support systems that influence academic success. This qualitative study uses 100 self-reported surveys completed by NKU students. The results from this study will inform the university of the experiences of college students with challenging coursework, and how they excel despite the challenges it presents.

#### **122. Financial Hardships and Stress levels among NKU Students.**

**MINNIE BLASINGAME: Social Work, Education and Human Services; FACULTY MENTORS:** Jessica Taylor, Reiko Ozaki; POSTER PRESENTATION

Stress has been proven to have a negative impact on academic performance and graduation rates among college students. Young adults may face high stress levels due to financial burdens and personal debt. These increased stress levels may affect the retention and graduation rates. The purpose of this study is to examine if financial hardships contribute to students' stress levels. One hundred self-administered surveys will be completed on NKU campus. It is anticipated that the students who carry large financial hardships experience high stress levels. Results can increase awareness and may be used to advocate for more resources for NKU students.

#### **123. Campus Inclusivity: Perceptions of NKU Students**

**PAMELA MASSEY: Social Work, Education and Human Services; FACULTY MENTORS:** Reiko Ozaki, Jessica Taylor; POSTER PRESENTATION

Lack of diverse staff and students on college campuses has a negative effect on school policies, programs, and student's safety for non-White students. This study aims to examine the way NKU students perceive these areas of inclusivity. A total of 100 surveys were administered in the Student Union building. It is anticipated that non-White students will view the policies, programs, and safety on campus more negatively than White students. Findings from this study could be used to advocate for more inclusive staff, and students to affect policies, programs, and safety practices on NKU's campus for non-White students.

#### **124. The Journey North**

**JOSHUA GOAD: Journalism, Informatics; FACULTY MENTOR:** Michele Day; POSTER PRESENTATION

As NKU celebrated its 50th anniversary in 2018, I wanted to know more about the founders of our university. I decided to develop a podcast to tell the story of the university's past. The history isn't easily accessible, so the details gathered are a rare glimpse inside Northern Kentucky during the 1950s to 1975. The podcast features a range of interviews with current and previous faculty and administrators. It also contains a multitude of interviews gathered from the Louie B. Nunn Center for Oral History.

#### **125. Bottoms Up: Understanding the Adult Children of Alcoholics (ACOA) on NKU's Campus**

**LISA PETREY: Counseling, Social Work, and Leadership, Education and**

**Human Services; FACULTY MENTORS:** Reiko Ozaki, Jessica Averitt Taylor; POSTER PRESENTATION

Parental alcohol abuse can negatively impact child development and can stay with them well into adulthood. Research shows that ACOAs are prone to poor self-esteem, depression, and substance abuse. The purpose of this study is to compare data on these issues between ACOAs and non-ACOA's. This self-administered survey will include a sample of 100 NKU students. It is expected to find that ACOAs will have lower self-esteem and significantly more mental health issues and substance abuse than non-ACOA's. The findings may provide information that can help advocate for this population and educate those working with them.

#### **126. Housing insecurities and its impact on academic success among NKU Students**

**MEGAN VONHANDORF: Counseling, Social Work, and Leadership, Education and Human Services; FACULTY MENTORS:** Jessica Taylor, Reiko Ozaki; POSTER PRESENTATION

According to the U.S. Department of Housing and Urban Development, 56,000 college students were homeless in 2015. Previous large scale studies show that housing instability negatively impacts college students' academic achievement. This study aims to examine these issues among NKU students. The self-administered survey will be used to collect data from 100 NKU students. It is anticipated that the findings will be comparable to previous studies and prove the impact of housing insecurities on academic success.

#### **127. Availability of Mental Health Services on Campus for NKU Students**

**JEN SCOTT: Counseling, Social Work and Leadership, Education and Human Services; FACULTY MENTORS:** Reiko Ozaki, Jessica Averitt Taylor; POSTER PRESENTATION

Roughly, one-third of undergraduate students exhibit symptoms of mental health problems, which may include depression, generalized anxiety, or suicidality. College students tend to have difficulty recognizing mental health problems and seeking help for them. It is imperative that students are aware of available mental health services provided at NKU. Using a self-reporting survey of a 100 students, this study will determine if NKU students are knowledgeable of mental health services provided on campus and if they are willing to access those services. The potential need for increased awareness on availability of mental health services on campus.

#### **128. Intimate Partner Violence among NKU Students**

**TIFFANY PAYNE: Counseling, Social Work, and Leadership, Education and Human Services; FACULTY MENTORS:** Reiko Ozaki, Jessica Averitt Taylor; POSTER PRESENTATION

Intimate partner violence (IPV) is a growing public health concern for college students. A national survey concluded that 57% of college students report being in an abusive relationship. The purpose of this research study is to explore perceptions and experiences of IPV among students at Northern Kentucky University (NKU). Using self-administered surveys, approximately 100 NKU students answered anonymously regarding their experiences and perceptions of IPV. It is anticipated that at least 15% will have experienced IPV. The data collected will provide NKU with information to improve current resources and awareness for the student body.

#### **129. Perceptions about Immigrants and U.S. Immigration Policy among NKU Students**

**HEATHER KIMMEL: Counseling, Social Work and Leadership, Education and Human Services; FACULTY MENTORS:** Reiko Ozaki, Jessica Averitt Taylor; POSTER PRESENTATION

While the number of immigrants coming to the U.S. has steadily decreased over the last few decades, negative perceptions about immigrants and their impact on U.S. culture has not decreased. This study attempts to explore the perceptions about immigrants and U.S. immigration policy on a college campus. A paper-and-pencil survey was used to collect data from 100 NKU student. The anticipated findings of this study are that NKU is a welcoming community to immigrants and students hold mostly positive views about immigrants. Findings from this study could be used to inform future research on campus climate related to immigration.

#### **130. Construction Material Salesmen: The People Who Construct Our World**

**CARLY SCHUTTE: Anthropology, Arts and Sciences; FACULTY MENTOR:** Michael

Simonton; POSTER PRESENTATION

The built environment is essential to modern perceptions of reality. As integral components in the construction of this world, construction material salesmen play a vital role in shaping society. Despite this, their unique cultural world is little studied nor understood for its myriad complexities. To better understand the world these men and women inhabit, their emic lexical categories and behaviors were gathered through the use of componential analysis, ethnography, and literature review. Upon evaluation, it was discovered that construction material salesmen maintain complex workplace relationships and a nexus of knowledge that is highly dependent on context.

### 131. Academic Success: Second-generation Students

**MARIA RAYA: Counseling, Social Work and Leadership, Education and Human Services;** FACULTY MENTORS: Reiko Ozaki, Jessica Averitt Taylor; POSTER PRESENTATION

Second-generation students (SGS) are individuals who were born in the U.S. with at least one immigrant parent. This group has increased on college campuses throughout the U.S. since 2011. Studies propose that the drive for academic success in SGS may be explained by the immigrant optimism theory. The purpose of this study is to examine factors that motivate SGS to achieve academic success. This study utilized a self-administered survey voluntarily completed by 100 NKU students. Expected findings include culture and family as motivational factors. Findings may contribute to future research on the academic success of SGS.

### 133. Drug Use among NKU Students

**MIRANDA BROWN: Counseling, Social Work, and Leadership, Education and Human Services;** FACULTY MENTORS: Reiko Ozaki, Jessica Averitt Taylor; POSTER PRESENTATION

Past studies show that a significant number of university students report using alcohol, non-prescribed pharmaceuticals and street drugs for reasons such as improving academic and athletic performance, relieving stress and fitting in. For this study, 100 NKU students answered survey questions regarding their experiences using drugs and alcohol, as well as their awareness of campus resources for help with addiction. The results are expected to reflect prominent drug use with low awareness of campus resources. The findings will provide insight into drug use by students, thus helping to identify if additional resources are needed on NKU's campus.

### 134. Basic Need Insecurities among NKU Students

**AMELIA WEHR: Social Work, Education and Human Services;** FACULTY MENTORS: Suk-hee Kim, David Wilkerson; POSTER PRESENTATION

There is growing evidence that there is a need for colleges to address food, housing, and other financial insecurities among students. Existing research confirms that undergraduate college students are susceptible to becoming food and housing insecure, as they often lack sufficient financial resources. Lacking in these necessities can affect students' welfare, reducing the odds that they will complete degrees. This study seeks to identify the prevalence of basic need insecurities among NKU students.

### 135. Students' Perspectives of Sexual Assault Reporting on NKU's Campus

**AVIGAIL HOLM: Counseling, Social Work, and Leadership, Education and Human Services;** FACULTY MENTORS: Reiko Ozaki, Jessica Averitt Taylor; POSTER PRESENTATION

Sexual assault is prevalent among universities nationwide and is believed to go grossly unreported. This survey study of approximately 100 Northern Kentucky University (NKU) students is intended to examine how prevalent sexual assault is and if NKU students believe that victims of sexual assault are reporting to law enforcement. The results of this study are expected to show that NKU students believe, like most campuses in the United States, sexual assault is largely not reported. The findings may inform future research on sexual assault reporting and bring awareness about how to help victims come forward and report.

### 136. Animal Assisted Interactions: Reducing Stress in NKU Students

**JUDY BOWMAN: Counseling, Social Work, Education and Human Services;** FACULTY MENTORS: Reiko Ozaki, Jessica Averitt Taylor; POSTER PRESENTATION

Research supports that stress, anxiety and depression are on the rise in college students. Stress makes it more difficult for students to excel academically, professionally and personally. Previous studies have shown that being around animals can help reduce stress by lowering the heart rate, decreasing blood pressure and increasing social skills. This qualitative survey of 100 NKU students seeks to examine the relation between animal interactions and the reduction of stress. The results will highlight the need to incorporate more animal assisted interactions for students on NKU's campus.





**137. Novel Inactivation of the Causative Fungus of White Nose Syndrome with Methoxsalen and Ultraviolet A Light****COLIN HARTMAN: Microbiology, Biology, Arts and Sciences; FACULTY****MENTORS:** Joseph Mester, Alan Cohen; **ORAL PRESENTATION**

White Nose Syndrome (WNS) is a newly recognized fungal disease responsible for the rapid mass destruction of North American bat populations. This study addressed the novel inactivation of fungal spores from *Pseudogymnoascus destructans*, the causative agent of WNS, using ultraviolet A (UVA) light at 365nm and methoxsalen, a photosensitizer from a family of compounds known as furanocoumarins. Spore suspensions were soaked in methoxsalen and subsequently exposed to UVA. The plates were examined for both spore inactivation and resultant inhibition of colony growth. The results demonstrated that methoxsalen plus UVA was an effective method for inactivating fungal spores of *P. destructans*.

**138. Academic Demands and Alcohol Use among University Students****CASSANDRA HENSLEY: Social Work, Education and Human Services; FACULTY****MENTORS:** Suk-Hee Kim, David Wilkerson; **POSTER PRESENTATION**

Alcohol use is a growing concern on college campuses nationwide. There is evidence supporting a connection between school workload and alcohol use among university students. This study examines problematic alcohol use and academic obligations of college students. It is anticipated that the findings from this study will support a correlation between students who drink in response to obligations at school and those who also report problems associated with alcohol use.

**139. Stress Symptom Manifestation in NKU Students****PAIGE INLOW: Social Work, Education and Human Services; FACULTY****MENTORS:** Suk-Hee Kim, David Wilkerson; **POSTER PRESENTATION**

College students commonly face environmental, academic, and/or financial stress while attending school. The physical symptoms of stress were identified by students surveyed in this study in an effort to evaluate the degree to which subjects report physical manifestations. Findings from this survey will take a closer look at not only which symptoms are being experienced by college students due to stress, but also how often they experience these symptoms. It is anticipated that this research will find that student most often experience stress through physical symptoms.

**140. Relationship between Trauma, Resilience, and Academic Success****JAMIE HENNIES: Social Work, Education and Human Services; FACULTY****MENTORS:** Reiko Ozaki, Jessica Taylor; **POSTER PRESENTATION**

Past research found that 84% of college students experienced childhood trauma, such as abuse or neglect. Trauma has consequences, including various mental health concerns, which often lead to academic struggles for college students. Resiliency, which is one's ability to find and utilize resources to help their well-being, can combat the effects of trauma. This cross-sectional study will use a self-reporting survey to examine how childhood trauma and the presence of resiliency influence academic success. It is expected that students who have experienced trauma will have greater academic success if they possess higher resiliency. Findings could support interventions that promote resiliency.

**141. Perceptions of Elderly Caregiving among NKU Students****LAUREN HENSLEY: Social Work; FACULTY MENTORS:** Reiko Ozaki, Jessica Averitt Taylor; **POSTER PRESENTATION**

The baby boomer generation is one of the fastest growing populations in the U.S. and will continue to grow over the next 10-15 years. Young adults will face the challenge of becoming their caregivers. The purpose of this study is to examine how NKU students view elderly caregiving and if there are social, academics, financial, or mental struggles that are associated with elderly caregiving. A paper survey was used to collect data from a sample of 85 NKU students. The findings are expected to show that NKU students perceive caregiving in a negative perception and the need for more available resources.

**142. Perceptions of Intellectual Disability among NKU Students****KELSEY DRIFMEYER: Social Work, Education and Human Services; FACULTY****MENTORS:** Reiko Ozaki, Jessica Averitt Taylor; **POSTER PRESENTATION**

Outward, conscious perceptions, or explicit perceptions, about people with intellectual disability (ID) are generally positive among community members. However, people with ID still experience rejection perhaps due to negative implicit perceptions, which are intuitive and unconscious. Most existing research measures

explicit perceptions. The purpose of this study is to measure implicit perceptions of ID among NKU student using an implicit association test. The researcher anticipates positive explicit perceptions but neutral or negative implicit perceptions. This data will help stakeholders at NKU build a more inclusive campus and increase the understanding of the relationship between explicit and implicit perceptions of ID.

**143. The Fatality of our Electronic Obsession****ASHLEY O'BRIEN: Honors, Environmental Science, Arts and Sciences; FACULTY****MENTOR:** Kimberly Weir; **POSTER PRESENTATION**

As electronic devices continue to evolve, the amount of electronic waste discarded each year is rapidly increasing. Even when consumers act responsibly by recycling their old devices, much of this waste is shipped from wealthy to developing countries, which makes ensuring proper disposal a challenge. When "e-waste" is not properly disposed of and processed, toxic chemicals and metals cause countless health and environmental problems. Impoverished people are most likely to suffer, as locals rely on harvesting materials from e-waste to earn a living. Consumers, countries, and corporations must commit to a more sustainable electronics industry.

**144. African American Student Experiences on a Predominantly White College Campus****BRANDI LEWIS: Counseling, Social Work & Leadership, Education and Human****Services; FACULTY MENTORS:** Reiko Ozaki, Jessica Taylor; **POSTER PRESENTATION**

Higher education inclusion and diversity services can positively affect a university campus climate or negatively for AA student enrollment, retention, and graduation rates. Conscious contributions toward diversity services drives NKU cultural awareness and student satisfaction. NKU intentions to address student inclusion, academic achievement, graduation and safety correlates directly to overall campus climate. This research aims to provide the impressions on impact of NKU's current inclusion services for AA students.

**145. The Price of Water****ALEX KAMMERER: Honors, International Studies, Arts and Sciences; FACULTY****MENTOR:** Kimberly Weir; **POSTER PRESENTATION**

Water desalination is a godsend to people living in coastal countries. Although the technology is costly, those experiencing water shortages can take advantage of turning salt water into potable water for drinking and agriculture. Unfortunately, water desalination can have dire sustainability consequences. This process requires a massive amount of energy, contributes to greenhouse gases if the energy source is nonrenewable, and releases concentrated levels of salt back into the oceans. My project considers the true cost of desalinated water.

**146. Adverse Childhood Experiences among Social Work Majors****SHELLIE "STELLA" MASSEY: Social Work; FACULTY MENTOR:** Suk-Hee Kim, David Wilkerson; **POSTER PRESENTATION**

Childhood trauma is known to persist into adulthood for some individuals and is manifested by a range of long-term consequences in behavioral, emotional and physical health problems. The Adverse Childhood Experiences (ACEs) Questionnaire examines multiple types of traumatic events that occur prior to age 18. There is limited research literature on the impact trauma has on college students' decisions to enter particular fields of study. This study examines the ACEs scores of NKU students. It is anticipated that ACEs scores will indicate a higher incidence of adverse childhood experiences among social work majors as compared to non-social work majors.

**147. NKU's Ramifications of Social Support and Sense of Belonging within Queer and Transgender Individuals****AMANDA J. KUHLMANN: Social Work; FACULTY MENTORS:** Caroline Macke, Kate O'Donnell; **POSTER PRESENTATION**

The ramifications of social support for queer/transgender individuals, as well as their sense of belonging can influence their present and future personal development. The current cross-sectional study seeks to examine social support among LGBTQ+ NKU students. A brief survey was used for data collection. Results are expected to show a lower sense of belonging among LGBTQ+ students. These findings can assist social workers in advocating for resources to create an atmosphere that is safe and suitable for learning and personal development. This is imperative since lacking social support can impact physical and mental health, academic success and financial literacy.



**148. Mangroves, Natural Diamonds for a Sustainable Future****FATOUMATA SOW: Honors, International Studies, Arts and Sciences; FACULTY MENTOR:** Kimberly Weir; POSTER PRESENTATION

Mangroves are home to intriguing trees that grow in coastal saline water, mainly located in tropical and subtropical areas. These plants not only provide a livelihood for the locals, but also benefit every human being by enhancing natural biodiversity, stabilizing coastlines, reducing erosion, containing carbon, and filtering water. However, due to deforestation and over-exploitation of the mangroves, our world is unfortunately on the brink of losing these precious plants and all they have to offer. My project explores the threats and attempts to protect these coastal treasures.

**149. Textbook Cost Effects on College Students****ANGEL M BELL: Social Work, Education and Human Services; FACULTY MENTOR:** Suk-hee Kim; POSTER PRESENTATION

In recent years, College students from around the world have struggled with the cost of required textbooks for classes. The current study seeks to address the gap in research on Northern Kentucky's Campus on how the cost of textbooks are affecting students' academic success. The study will be utilizing a cross-sectional survey design with non-probability and purposive sampling. Findings from this study will inform research into the study awareness on our college campus and support the development of appropriate resources on the university campus.

**150. Neurocognitive and Motor Recovery in Substance Use Disorders****KAYLA HAYES: Psychology, Honors Capstone, Arts and Sciences; FACULTY MENTOR:** Cecile Marcinski; ORAL PRESENTATION

Substance abuse has become a major epidemic in the United States over the past several years. This has led to an increase in rehabilitation programs and facilities in order to promote recovery. Neurocognitive and motor impairments are evident in individuals entering treatment for substance use disorders. This project involves a systematic review of this literature noting similarities and differences to other health conditions where cognitive impairments are observed (e.g., dementia, traumatic brain injury).

**151. Let's Raise the Bar: The Fair-Trade Chocolate Bar****KAYLA HAYES: Honors, Biology, Arts and Sciences; FACULTY MENTOR:** Kimberly Weir; POSTER PRESENTATION

When you take a bite into that delectable chocolate bar, do you ever stop to think about who grew the cacao that made your favorite treat possible? What if the cacao harvested to make your chocolate bar was done so through the use of slave labor? Would that chocolate still taste as good? Let us explore the global benefits of buying Fair-Trade Certified Chocolate! Learn about the sustainable and fair-trade cocoa sector where farmers earn a fair income, ethical standards that prohibit slave labor are met, and the environment is conserved through shade-grown cacao trees.

**152. Fluorescence Properties of 3-Methoxy-Estrone****MAX MCCONAUGHY, ERIC ADRIANO: Chemistry, Biology, Arts and Sciences; FACULTY MENTOR:** Patrick M. Hare; POSTER PRESENTATION

Estrones with an unsaturated A ring and a carbonyl group at carbon 17 exhibit emission from both functional groups following absorption by the benzene ring. To help understand how this process occurs, the fluorescence spectra of 3-methoxy-estrone were recorded in multiple solvents and the fluorescence quantum yields measured. The addition of the methyl group on the oxygen connected to carbon 3 removes an excited state that is present in estrone, showing the role of that excited state in the fluorescence spectra.

**153. Student Perception on Learning in a Simulated Compared to Traditional Clinical Environment****CAROLINA GONZALEZ, CRISTIN OAKLEY, KELLY STUCKER: Nursing, Health Professions; FACULTY MENTOR:** Karen O'Connell; POSTER PRESENTATION

Clinical experiences are an essential component of nursing education. However, there are barriers to learning in the traditional clinical environment due to limited clinical sites, instructor availability, and hospital safety initiatives. Research suggests that the simulated clinical environment is comparable to the traditional clinical environment in meeting students learning needs. The purpose of this evidence based project is to investigate how well students' perceived learning needs are met in a simulated clinical environment compared to a traditional clinical environment. Results will be used to inform decisions regarding increased utilization of simulated clinical experiences into the current curriculum.

**154. Hip-Hop Music's Influence on the Scope of Popular Culture in the 2010's**  
**CLAY BONIN: Popular Culture Studies, Electronic Media and Broadcasting, Informatics; FACULTY MENTOR:** Sara Drabik; ORAL PRESENTATION

Popular Culture is something that people of all demographics are exposed to and interact with every day. In the past decade it has overwhelmingly been run by Hip-Hop culture. We can hear the influence of the music in anything from Country Music to Latin Pop, along with the fashion of Hip-Hop influencing designer brands and their collections. This study's purpose is to figure out why Hip-Hop is a dominant force through podcast interviews with people whose lives are directly affected by Hip-Hop, thus depicting the reason as to why Hip-Hop is so prevalent in the modern day.

**155. Identification of the Enzyme Responsible for the acp3U Modification in Bacteria****MAGGIE THOMAS, JAMIE BURCHETT, SARAH SPIGELMYER: Biochemistry, Chemistry, Arts and Sciences; FACULTY MENTOR:** Michael Guy; POSTER PRESENTATION

tRNAs are biomolecules critical to protein synthesis. tRNAs require chemical modifications for proper function, with defects often associated with diseases. An unknown enzyme forms the 3-(3-amino-3-carboxypropyl) uridine (acp3U) modification found on some plant, animal, and bacterial tRNAs. Two approaches are being used to identify this enzyme. The first uses primer extension with plant or bacterial tRNAs to detect modification activity in bacterial extracts. The second uses plant tRNA and a cDNA library expressed in yeast, followed by acp3U detection by primer extension. Identification of the acp3U enzyme in plants or bacteria should aid in the identification of the human.

**156. The Adverse Effects of Smoking on Rotator Cuff Tear Surgical Outcomes: A Retrospective Data Analysis on Smoking vs. Non-Smoking vs. Previously Smoking Patients Undergoing Rotator Cuff Repairs****ARIEL PORTER: Honors College, Biology, Arts and Sciences; FACULTY MENTOR:** Patricia Kappesser; POSTER PRESENTATION

Rotator cuff injuries are common in older and more active patients, often resulting in a rotator cuff repair surgery. This retrospective study looks at smoking as a risk factor for poor post-operative surgical outcomes: determined by the American Shoulder and Elbow Surgery (ASES) score and Simple Shoulder Test (SST). Prior studies correlate smoking with negative outcomes. The purpose of this study is to compare smokers with nonsmokers in terms of long-term post-operative functionality and pain and to look at a third unstudied cohort of former smokers with aims at providing supporting evidence for smoking cessation campaigns to benefit population health.

**157. The Likelihood of 'Like': Historical Exploration of the Non-Standard 'Filler'****SYDNEY BAKER: English, English Literature, Arts and Sciences; FACULTY MENTOR:** Tamara O'Callaghan; POSTER PRESENTATION

This research investigates the usage of "filler words," or non-silence devices, in contemporary American English and, to a lesser degree, British and Commonwealth English. It focuses primarily on the historical transition and rapid grammaticalization of the non-standard 'like' with reference to other filler, pauses, and placeholders. Analyzing the external and internal linguistic motivations, this project explores the new 'like' with an emphasis on code-switching, modality, self-regulation, and social mimicry. In addition to highlighting the etymology or historical usage of 'like,' it problematizes the stereotyping of 'like' when used by Millennial and Gen-Z speakers.

**158. En amitiés créoles: Found Poetry in Praise of Creoleness****CASSANDRA RINEHARD: French, Arts and Sciences; FACULTY MENTORS:** Gisèle Lorient-Raymer, Iliana Rosales Figueroa; ORAL PRESENTATION

Francophone Caribbean authors have redefined Caribbean identity as a mosaic of cultures inclusive of European, Asian, and African influences, yet entirely new and unique in its Creoleness. The process, format, and presentation of my creative project aims to capture the spirit behind this mosaic identity. I created a zine of found poetry made of excerpts from Francophone works, rearranged to express themes important to these authors, and set on an artistic background of Caribbean images and magazine extracts. Together, the various components of the collage work to reflect the diversity and complexity of the composite Creole identity.

**159. Early-Life Antipsychotics and Neuronal Activity in the Adult Prefrontal Cortex****EMILY LOHMANN, TARYN TAUGHER: Psychology, Arts and Sciences; FACULTY MENTOR: Mark Bardgett; POSTER PRESENTATION**

The goal of our research is to determine if antipsychotic drugs that are often used to treat childhood psychiatric disorders alter brain development. Using rats as a model, we measured a cellular marker of ongoing neuronal activity during adulthood in rats administered the antipsychotic drug, risperidone, early in life. Cellular activity was assessed by identifying neurons that were immunoreactive for Fos, a transcription factor expressed in metabolically active cells. While sub-regional differences in the number of Fos-positive neurons were evident, early-life risperidone did not alter Fos expression in the adult prefrontal cortex.

**160. Statistical Analysis of Palliative Care Services for Patients in the ICU**  
**SAMANTHA SHAW: Statistics, Arts and Sciences; FACULTY MENTOR: Joseph Nolan; POSTER PRESENTATION**

The Burkardt Consulting Center often provides statistical support for medical studies and clinical trials. We help take sample data and turn it into generalizable knowledge. This poster examines this process for a palliative care services study conducted by one of our clients. Data from 2017-18 were analyzed to compare numerous outcomes for ICU patients who received palliative care versus those who did not. Methodologies used, including ANOVA with Tukey-adjusted multiple comparisons and logistic regression, are the focus of this presentation.

**161. Identification of the methyltransferase responsible for 2'-O-methylation of tRNA position 39 in *Arabidopsis thaliana*****RACHEL MORGESON, JAMIE BURCHETT, RAMEY HENSLEY: Biochemistry, Biology, Chemistry, Arts and Sciences; FACULTY MENTORS: Michael Guy, Holly Funk; POSTER PRESENTATION**

Post-transcriptional modifications of tRNAs are crucial for protein synthesis. The enzyme responsible for 2'-O-methylation of tRNA nucleotide 39, which occurs in humans and plants but not yeast, is unknown. A plasmid expressing a plant tRNA that receives this modification, and plasmids expressing candidate plant methyltransferase genes are being made. Plasmids with candidate genes will be expressed with the tRNA-containing plasmid in yeast, and tRNA will be analyzed by UPLC to determine if the modification is present. Presence of the modification indicates that the gene encodes the correct enzyme, which will then allow for identification of the human enzyme by bioinformatics.

**162. Not all Fossil Fuel Systems are Equally Polluting****DAVID DODGE: Honors, Data Science, Informatics; FACULTY MENTOR: Kimberly Weir; POSTER PRESENTATION**

While fossil fuels are generally regarded as bad, not all fossil fuel systems are created equal. Some designs release astonishing amounts of air pollution, while others are cleaner than they get credit for being. Discover some fun and not-so-fun facts about fossil fuel emissions from the exhaust regulations for ocean-going vessels (there are none) to the fuel economy of landing on the moon (cheaper than you would think). Our atmosphere is fragile and understanding the impact that different technologies have on our air is critical as these technologies scale to meet the growing needs of both developed and developing countries.

**163. Unearthing Resistance through Educational Equality: A Brief Look into Daily Life at the Parker Academy from Personal Correspondence and Material Culture****LIZA M. VANCE: Public History, Arts and Sciences; FACULTY MENTOR: William Landon; ORAL PRESENTATION**

While the Ohio River was often the dividing line between slavery and freedom, resistance to racial prejudice was not uncommon along its banks. A vision of its founders, Daniel and Priscilla Parker, the Parker Academy fought against slavery with equal education. Established in 1839, it is believed to be the first school in the United States to offer fully integrated and co-educational classrooms. Through a multidisciplinary project funded by the National Science Foundation, research into how daily life promoted equality is obtained from archival and archaeological evidence.

**164. Pedal Power Generation for Off-Grid Purposes****ANNA SAUNDERS: Electrical Engineering Technology, Arts and Sciences; FACULTY MENTOR: Zeel Maheshwari; POSTER PRESENTATION**

In 2016, about 40.5 million Americans went camping for an average of 14 days. They often do not have access to electricity during this time. However, there are many ways to obtain electricity without using the power grid. Pedal power generation is the act of converting mechanical energy to electrical. Bicycles can be converted into pedal generators that are simpler, cheaper, and environmentally friendly than alternative battery charging technologies, such as diesel-powered generators. One can ride a bike during the daytime while the battery is being charged. At night, the charged battery can be used to power lights, charge phones, and even cook a meal with an electric stove.

**165. Setting Standards for Judging Teaching Effectiveness: Does Instructor Gender Matter?****HALEY DAY, CARLY BARNHORST: Social Psychology, Psychological Science, Arts and Sciences; FACULTY MENTORS: Kathleen Fuegen, Robin Bartlett; POSTER PRESENTATION**

Research examining the influence of gender stereotypes on students' evaluations of course instructors has found ratings were lower when the instructor was thought to be female. The present study extends this research by examining the role of gender in setting standards for evaluating instructor competence. College participants will be given a description of a male or female instructor and answer questions measuring their attitudes and expectancies of instructor behaviors (e.g., hours devoted to updating lectures, speed in responding to email). Results are expected to reveal differences in evaluations of instructor effectiveness based on the instructor's gender.

**166. Development and Validation of a Work Life Balance Scale for Future Generations****BRITTANY COMSTOCK, MARIAH RILEY, KARLEY SOMMERFIELD, ASHLEY NEIMEIER: Industrial/Organizational Psychology, Arts and Sciences; FACULTY MENTOR: Phillip Moberg; POSTER PRESENTATION**

The current study investigated the preliminary factor structure, construct validity, and reliability of a newly developed scale designed to estimate the perceived level of equilibrium between work and nonwork activities ( $N = 342$ ). We constructed and administered 46 items representing three proposed dimensions of work-life balance, the perceived satisfaction, support, and empathy experienced in work and nonwork settings. Four factors emerged, however, that differed somewhat in meaning from those hypothesized. To evaluate construct validity, we examined factor correlations with previously validated measures of six constructs, trait anxiety, general stress, turnover intention, absenteeism, organizational commitment, and work engagement.

**167. Quantification of dNTPs Levels in SAM mutants in *S. Cerevisiae*****METI B. LEMU: Biology, Arts and Sciences; FACULTY MENTORS: Erin Strome, Kellyn Hoffer; POSTER PRESENTATION**

The SAM1 and SAM2 genes in *Saccharomyces cerevisiae* encode enzymes of the methyl cycle responsible for formation of S-adenosylmethionine (AdoMet). Previous research has shown that having different copy numbers of the two SAM genes affects AdoMet levels as well as chromosome stability. This project aims to quantify dNTPs levels in these SAM gene mutants to study the effects of perturbations to the methyl cycle which feeds into production of these dNTPs, the building blocks of chromosomes. This employs a novel rapid detection and quantification assay for dNTPs using real-time PCR that is adjusted for assaying in *S. cerevisiae*.

**168. Detecting Phenotypic Changes Due to Altered Methyl Donor Abundance****KAILIE KENWRIGHT, AMILA CORIC, ADDIE GREEN: Biology, Arts and Sciences; FACULTY MENTOR: Erin D. Strome; POSTER PRESENTATION**

Our project goal is to determine phenotypic differences in *Saccharomyces cerevisiae* strains with altered expression of the SAM1 and SAM2 genes. SAM1 and SAM2 encode proteins involved in production of S-AdenosylMethionine, the major methyl donor in most cells. Since methylation events are used in regulation of many processes, narrowing of possible cellular targets was needed. Growth changes of mutant strains compared to the wildtype strain were observed using Phenotypic Microarray plates, subjecting strains to different conditions. Growth curves were created and used to determine differences, with the goal to identify specific pathways altered due to SAM1 and SAM2 mutations.

**169. Utilization of Campus Services by Commuting Students****BRANDY LOVENSHEIMER: Social Work, Education and Human Services;****FACULTY MENTORS:** Suk-hee Kim, David Wilkerson; **POSTER PRESENTATION**

In 2017, Northern Kentucky University reported more than 11,000 students who lived off campus or commuted to the school for classes. NKU provides a number of programs and services to support student learning, promote a positive student experience on campus, and to help alleviate barriers in order to increase retention and graduation rates. This study examines the utilization of these programs and services by students who live off campus and commute. More specifically, it is expected that commuting students surveyed will report low utilization of on-campus programs and services.

**170. Adverse Childhood Experiences (ACEs) and Attention-Deficit/Hyperactivity Disorder (ADHD) among NKU Students****GRACE FORD: Social Work, Education and Human Services; FACULTY MENTORS:****Reiko Ozaki, Jessica Averitt Taylor; POSTER PRESENTATION**

Adverse Childhood Experiences (ACEs) are traumatic events, such as abuse or witnessing domestic violence, that individuals experience before age 18. Research shows nearly 60% of adolescents experience at least one ACE. Some symptoms of manifested trauma can be similar to symptoms of Attention-Deficit/Hyperactivity Disorder (ADHD), causing concern that youth are being misdiagnosed. This study aims to examine the correlation between ACEs and ADHD among NKU students. The data were collected using a paper survey administered to approximately 100 students on NKU's campus. A high correlation between ACEs and ADHD is expected. Findings may help identify needs for students.

**171. The Chains of Grains****TAYLOR PRIEDE: Honors, International Studies, Arts and Sciences; FACULTY****MENTOR:** Kimberly Weir; **POSTER PRESENTATION**

Rice is an essential source of food throughout the world. Its tendency to grow in wet environments makes it an indispensable crop both for survival and profit. Often overlooked, however, is that the retail price is disproportionate to the cost of production; the compensation rice farmers receive is frequently a fraction of what corporations do. Fair trade offers producers a better chance to escape poverty. Rice under the fair-trade banner also promotes sustainability, as the standard practice requires farmers to meet rigorous environmental expectations. Through fair trade, the quality of farmers' lives is improved as much as their crops.

**172. Generating elp1 Knockouts in Candida Albicans using CRISPR/Cas9****JUSTIN RABE, DOMINIC RUWE: Biochemistry, Chemistry, Arts and Sciences;****FACULTY MENTORS:** Michael Guy, John Carmen; **POSTER PRESENTATION**

*Candida albicans* is an opportunistic fungus found in the gastrointestinal tracts and mouths of 40-60% of humans. It grows as yeast and hyphae. The ability to shift from yeast to hyphae is required for pathogenesis. Previous studies suggest that in a related species the tRNA-modifying elongator complex is responsible for a similar growth pattern. We are using CRISPR/Cas9 to delete the homolog of a component of the elongator complex in *C. albicans*. We will determine the effects on hyphal growth. After we will analyze levels of tRNA modifications in *C. albicans* before, during, and after hyphal shifts by UPLC.

**173. Pineapples for Life****DELANEY FICHLIE: Honors, Political Science, Arts and Sciences; FACULTY****MENTOR:** Kimberly Weir; **POSTER PRESENTATION**

Many people enjoy pineapples, especially in the summertime. People focus on how delicious the fruit is, but in reality should focus on the means of it arriving from a farm to their plate. Many pineapples are grown in Global South countries where the producers have a very poor standard of living. Buying pineapple that is fair trade would help the workers improve their quality of life by receiving a livable wage for their work, do less harm on the environment, and giveback to communities around the globe.

**174. Energy Efficiency Improvement of Mobile Applications Aided with Edge Computing****ZIYIN ZHANG: Computer Science, Informatics; FACULTY MENTOR:** Wei Hao;**POSTER PRESENTATION**

Edge computing has been widely adopted as an effective approach to increasing the performance of various websites and applications. Meanwhile, mobile devices are known for their limited computing resource. Computing intensive applications

usually have poor performance and even worse, they consume a large portion of battery life. We propose a new mobile application system aided with edge computing so that intensive computing tasks will be executed in the edge. We will demonstrate that not only the application performance will be improved, but the energy efficiency will be significantly increased.

**175. What Constitutes Well-Adapted Films Based on Novels****CHRISTOPHER WEAVER: English, Honors Capstone, Arts and Sciences; FACULTY****MENTOR:** John Alberti; **ORAL PRESENTATION**

More and more films adapted from novels are being released each year. Academic study into the quality of adaptations as a whole is a field in constant flux. It is useful to construct a framework in which to analyze the quality of adapted films. I used a set of four case-studies to begin constructing such a framework. I read four novels and watched their respective major motion pictures. Using collected research and textual analysis, I created a framework of criteria to judge adaptations. While a work in progress, it may be useful to further adaptation studies.

**176. Adverse Childhood Experiences and Substance Abuse in Northern Kentucky University Students****WHITNEY CHRISTOPHERSEN: Social Work, Education and Human Services;****FACULTY MENTORS:** Reiko Ozaki, Jessica Taylor; **POSTER PRESENTATION**

Research has shown that Adverse Childhood Experiences (ACEs) can be linked to numerous health damaging behavior, such as substance abuse, long after the experiences occur. The purpose of this study is to examine the relationship between substance abuse and ACEs among Northern Kentucky University students. Data will be collected using surveys taken by 100 NKU students. The study expects to find a positive correlation between ACEs and substance abuse. The findings of this study may provide insight into NKU students' experiences and inform the university in its effort to support the students.

**177. Sleep Disturbance Prevalence among NKU Students****ALYSSIA KELLEY: Social Work, Education and Human Services; FACULTY****MENTORS:** Dave Wilkerson, Suh-Kee Kim; **POSTER PRESENTATION**

Recent studies have shown that college students face high levels of stress and adverse physical symptoms such as sleep interference directly related to attending college. The purpose of this study is to look at the proportion of full-time NKU students who report that they experience trouble falling asleep. Approximately one hundred college students were surveyed to assess the prevalence of sleep interference due to stress. Anticipated survey results will show that the majority of full-time students experience disturbance in sleep onset.

**178. Self-Harm among NKU Students****KAITLYN LUTZ: Social Work, Education and Human Services; FACULTY****MENTORS:** Suk-hee Kim, David Wilkerson; **POSTER PRESENTATION**

Previous studies have found that the prevalence of self-harm among college students is as high as 17% of those studied. Self-harm reported by students included cutting, burning, and carving their skin. Self-harm among college students remains to be a persistent social problem. There is little data on the prevalence of self-harming behavior among NKU students. This study examines the prevalence of self-harm reported by NKU students. It is expected that data collected by this study will find rates of self-harm among NKU students that is consistent with previous findings.

**179. Exploring New Frontiers****SAVANNAH PURCELL, KAYLA COMBS, KRISTIN SCHIMMELMAN, ADAM****CLEMENTS, RAMONA ROWAN: Marketing, Organizational Leadership,****Business, Arts and Sciences; FACULTY MENTOR:** David Raska; **POSTER****PRESENTATION**

The purpose of this project is to assist our client, Frontier Airlines (Denver, CO), to analyze its branding strategy (i.e., Brand DNA) and validate its alignment with its target segments. Team has conducted extensive exploratory research, including secondary data research, field interviews, and analysis of qualitative insights obtained from online reviews and social media. The uncovered insights were used to re-create Frontier's brand DNA, its brand story, its prime prospects, and creative strategies for turning those prospects from prospective customers into brand advocates.



**180. Animal Assisted Interactions: Reducing Stress in NKU Students**

**JUDY BOWMAN: Counseling, Social Work, Education and Human Services;** FACULTY MENTORS: Reiko Ozaki, Jessica Averitt Taylor; POSTER PRESENTATION  
Research indicates that stress, anxiety, and depression are on the rise in college students. Stress makes it difficult for students to excel academically, professionally, and personally. Studies demonstrate that being around animals can help reduce stress by lowering the heart rate, decreasing blood pressure, and increasing social skills. This qualitative survey of 100 NKU students seeks to examine the relationship between animal interactions and the reduction of stress. It is anticipated that the relationship exists between those variables in this particular group. The results will highlight the need to incorporate more animal assisted interactions for students on NKU's campus.

**181. Uncovering the Women of Parker Academy**

**LYNDSEY MCNABB, DELANEY GILLIAM: Anthropology, Arts and Sciences;** FACULTY MENTOR: Sharyn Jones; POSTER PRESENTATION

Our research digs deep into the lives of the women who were a part of the Parker Academy, founded in 1839. Using our experience from excavating the Parker Academy site along with our extensive research in the school's archives, we are able to piece together what daily life was like at this revolutionary school. Upon graduating most of the students went on to lead pivotal roles in abolitionist and suffrage movements. By retelling their stories and the history of the Parker Academy we can better understand many issues we still face today in America.

**182. Using RNA Interference to Identify the acp3U tRNA Modification Enzyme in Higher Eukaryotes**

**JAMISON BURCHETT, MAGGIE THOMAS, DOMINIC RUWE, RACHEL MORGESON, REGAN BALES: Biochemistry, Chemistry, Biology, Arts and Sciences;** FACULTY MENTOR: Michael Guy; ORAL PRESENTATION

Transfer RNA (tRNA) undergo post-transcriptional modifications to ensure function and stability, and their defects have been linked to cancer, diabetes, and intellectual disabilities. The gene responsible for the 3-(3-amino-3-carboxypropyl) uridine (acp3U) modification is currently unknown. This modification is highly conserved in animals and plants, and this high level of conservation means this modification is likely required for tRNA function. To identify the gene responsible, candidate genes were silenced using RNAi in fruit fly cell cultures and their tRNA was then analyzed. Alternatively, plant tRNA and candidate genes are being coexpressed in yeast to screen for the presence of the modification.

**183. Using Palm Oil to Death**

**CHRISTOPHER RIEHL: Political Science, Public Relations, Arts and Sciences;** FACULTY MENTOR: Kimberly Weir; POSTER PRESENTATION

Within the past two decades, the Global North's demand for palm oil has risen to excessive consumption. This unsustainable demand requires attention from the global community. Palm oil production is killing the planet and harming its inhabitants at a more rapid pace than previously thought. Large-scale palm oil production destroys animal habitats, causes pollution, and contributes to global warming. Indigenous people are displaced and taken advantage of for labor. This project analyzes the devastating effects of the palm oil industry and what can be done to promote sustainable practices.

**184. Adverse Childhood Experiences and Health among College Students**

**KRISTEN TURNER: Social Work, Education and Human Services;** FACULTY MENTOR: Suk-hee Kim; POSTER PRESENTATION

Adverse childhood experiences (ACEs) are a wide variety of traumatic events, which occur before the age of 18. However, there is limited research surrounding how ACEs affect college students' physical and mental health. To address this gap in the literature, the purpose of the study is to examine the correlation of ACE scores and adult onset physical and mental health diagnoses. This study conducted using face-to-face surveys and used non-probability, purposive sampling to collect data from one hundred (100) college students on campus. The study expects to inform campus programs of better ways to support for their students.

**185. Moby-Dick, Benito Cereno and Pidgin through a Nigerian Lens**

**ONYINYE UWOLLOH: Honors, Psychology, Arts and Sciences;** FACULTY MENTOR: Bob Wallace; ORAL PRESENTATION

"Ishmael na my name" is a sequence of haiku in the Pidgin English of Onyinye Uwolloh's native Nigeria. It was her final project in Dr. Bob Wallace's course on

*Moby-Dick* and the Arts, and narrates the entire story through the multinational language many whalers used to communicate on their ships. Uwolloh will also present a Nigerian student's view of Melville's *Benito Cereno*, a story about an African slave revolt. Her creative and interpretive responses to these works provide new insights into the stories Melville wrote for our global, post-Colonial world.

**186. Healthcare Experiences of People with Disabilities**

**LILLIE PENNINGTON: Honors Capstone, Honors, Education and Human Services;** FACULTY MENTOR: Shauna Reilly; ORAL PRESENTATION

While people with disabilities often utilize healthcare services more than the general public, little research has been done into the experiences of stigma and discrimination that this population may face in this specific setting. A survey with both quantitative and qualitative elements was conducted to assess the experiences of stigma and discrimination that people with disabilities accessing healthcare may face along with gathering suggestions for specific steps medical providers can take to make their practices and interactions with patients more inclusive. This presentation will discuss key findings from the survey and directions for future research.

**187. Applying Counseling Skills in the Workplace: An Interdisciplinary Project**

**JESSICA SHARKEY: Integrative Studies, Arts and Sciences;** FACULTY MENTOR: Rachel Zlatkin; ORAL PRESENTATION

This project focuses on how to improve employee engagement in the workplace through teaching management and workplace leadership about the Industrial Organizational Psychology and Counseling research that suggests the usage of Counseling techniques when interacting with employees in the workplace. The literature posits that empathetic supervisors who engage in skills such as active listening experience better rapport with their employees, who are more productive and engaged in their work as a result. This project also examines how workplace fun and employee wellness programs and initiatives help improve workplace climate and associate engagement.



**188. Weaving "The Loom of Time": A Hand-Crafted Moby-Dick Scarf****SUMMER SMITH: English, Arts and Sciences; FACULTY MENTOR: Robert Wallace; ORAL PRESENTATION**

The double-sided scarf that I created in response to Melville's 1851 novel, *Moby-Dick*, gives individuals who know the story an opportunity to view it in multiple ways depending on which side they see. One side features Captain Ahab's infinite search for Moby Dick, while the reverse showcases man's interlocked relationship with nature. Melville emphasizes the importance of maintaining an equal eye and being open to fresh and unexpected signs, symbols, and perceptions. The goal of this scarf is that it inspires a desire to learn more about the novel, nature, and the need to justify our life.

**189. SAM1 and SAM2 Gene Alterations and Their Impact on Reactive Oxygen Species Levels in *Saccharomyces Cerevisiae*****JIHYE KANG, JAMES MACKE: Biology, Arts and Sciences; FACULTY MENTOR: Erin Strome; POSTER PRESENTATION**

*Saccharomyces cerevisiae* has two genes, SAM1 and SAM2, responsible for production of S-Adenosylmethionine (AdoMet). AdoMet is involved in the methyl cycle, which feeds into glutathione production, involved in scavenging reactive oxygen species (ROS). ROS are known to interact with various types of molecules in cells, including DNA, which could explain genome instability changes seen in these SAM mutants. We therefore wish to measure ROS levels in our strains utilizing fluorescence spectrophotometry and a H2DCF-DA-ROS reaction. Alterations in ROS levels would support a role of alteration of the methyl cycle, due to SAM mutations, in genome instability.

**190. Serverless Architecture****TEERAPONG UTHAIRAT: Computer Information Technology, Informatics; FACULTY MENTOR: Wei Hao; POSTER PRESENTATION**

Serverless compute service, such as AWS Lambda, has been widely adopted by software developers today as it eliminates server configuration and server maintenance. AWS Lambda@Edge is an integration of AWS Lambda and AWS CloudFront that allows AWS functions to execute closer to the user and web objects to be cached. This research will demonstrate how AWS Lambda@Edge can be used to improve the performance of a web application when cached objects are delivered. User experience will also be enhanced as web content can be customized based on user's preference such as languages.

**191. The Politics of Space: Density and Democratic Vote Share****DEVON MOFFETT: Political Science, Economics, Arts and Sciences; FACULTY MENTOR: Shauna Reilly; POSTER PRESENTATION**

It is clear that there is a great political divide between urban and rural areas. What is less clear is whether such a divide exists between less dense and more dense cities, and whether density itself is the cause of political differences. In order to clarify this, an independent data set was first constructed from multiple sources. A regression was then run to assess the general nature of the relationship between density and Democratic vote share in cities. Following this, a Granger Causality test was utilized to determine the presence and direction of causality. Ultimately, an increase in density was shown to coincide with an increasing Democratic advantage, and this movement was shown to be causal.

**192. Identification of Conserved Motifs Important for Trm732 Function in Yeast****DAISY DIVITA: Biochemistry, Chemistry, Arts and Sciences; FACULTY MENTOR: Michael Guy; ORAL PRESENTATION**

Post-transcriptional modifications are crucial for the proper function of transfer RNA (tRNA). 2'-O-methylation of tRNA residue 32 (Nm32) is conserved among eukaryotes, including yeast and humans. Trm7 methyltransferase interacts with the Trm732 accessory protein form Cm32 on tRNAPhe in yeast. Mutations in FTSJ1 (human TRM7) cause intellectual disabilities and mutations in THADA (human TRM732) have been linked to polycystic ovary syndrome and type 2 diabetes. We have identified two conserved motifs within Trm732 that are important for protein function. Currently, we are using biochemical and genetic assays to further analyze the function of Trm732.

**193. Perceptions of Greek Life at Northern Kentucky University****AUTUMN GILBERT: Anthropology, Arts and Sciences; FACULTY MENTOR: Douglas Hume; POSTER PRESENTATION**

This poster explains research findings on the perceptions of Greek life by both members and non-members of social Greek letter organizations. This project hypothesizes that members' perceptions of Greek life are different from non-members' and that members will have more positive perceptions of Greek life than non-members. Data were first collected through ethnographic interviews on Northern Kentucky University's campus and then through an online questionnaire. The questionnaire collected informant agreement with propositional statements about Greek life. The findings of this research include both qualitative and quantitative analyses that support the hypotheses.

**194. Schedule of Reinforcement Modulates Drug Effects in Delay Discounting: A Measure of Impulsive Choice****WILLIAM STACY: Neuroscience, Arts and Sciences; FACULTY MENTOR: Justin Yates; POSTER PRESENTATION**

Delay discounting is a measure of impulsive choice. Previous studies have shown that procedural manipulations (e.g., signaling the delay to reinforcement, increasing or decreasing delays to reinforcement) can modulate drug effects in this task. However, research has not extensively studied how the schedule of reinforcement can modulate drug effects. Our study showed that the drug MK-801 decreases impulsive choice, but only when rats are trained on a fixed ratio (FR) 1 schedule of reinforcement (i.e., rats press the lever just once). When rats are trained on an FR 10 schedule, MK-801 has no effect.

**195. Heteroaryl isoflavanone compounds as aromatase inhibitors: Diketone Reaction Screening****ALEXANDER ROSEN: Chemistry, Honors Capstone, Arts and Sciences; FACULTY MENTOR: Lili Ma; POSTER PRESENTATION**

Breast cancer is the second most common type of cancer, affecting millions of individuals. The purpose of our project was to synthesize molecules that could aid in the treatment of hormone-receptor positive breast cancer cells. During work conducted in previous summers, an unexpected diketone structure was discovered through palladium catalysis. The work conducted was in effort to recreate the diketone product, with high purity and yields, in order to facilitate further exploration of the diketone reaction.

**196. The Effects of Anxiety And Depression among College Students****WILLIAM WILKERSON: Social Work, Education and Human Services; FACULTY MENTOR: Kathryn O'Donnell; POSTER PRESENTATION**

Depression and anxiety is an ongoing social issue that affects a wide range of people in areas such as social interactions, academic achievement and physical health. With recent research showing college students are at a higher risk of suffering from anxiety and depression, it is important to understand how NKU students are affected by this. Research was gathered by surveying 277 NKU students on campus. This information will help us to understand how NKU students are affected by anxiety and depression. It is expected that both anxiety and depression will negatively impact students in achieving their academic goals.

**197. The Impact of Financial Stress****LUIS ARDUZ: Social Work, Education and Human Services; FACULTY MENTOR: Kathryn O'Donnell; POSTER PRESENTATION**

Financial stress, which is a substantial problem among college students, can result in an array of negative consequences including mental illness and decreased academic performance. Additionally, financial stress can impact students' choice of major. The current study seeks to examine financial stress among NKU students and whether or not this impacts their choice of major. A 5-minute survey was completed by 277 NKU students. The expected findings will show that NKU students are experiencing high levels of financial stress, and that this has impacted their choice of major. These results will help advocate for student services to reduce financial.

**198. Disciplinary Spanking: Effects on Behavior, Development, and Mental Health****ANDREA BACHMAN: Nursing, Honors, Honors Capstone, Health Professions; FACULTY MENTOR: Beth Hickey; POSTER PRESENTATION**

This project aimed to educate the public on the effects of disciplinary spanking on child behavior, development, and mental health, and advise health care providers on effective discipline education. It was completed via a systematic literature review, creation of an educational pamphlet, and a campus-wide survey that gathered childhood experiences and measured receptivity to discipline education.



The strengths include abundant research on the topic for study and a large sample size. The limitations include strictly subjective data and convenience sample use. Ultimately the goal was to improve healthy behavior, development, and mental health in children that transmits into adulthood.

### 199. NKU's Food Waste Dilemma

**KIMBERLY SPARKS: Honors, Data Science, Informatics;** FACULTY MENTOR: Kimberly Weir; POSTER PRESENTATION

Food waste is a global concern, and the United States is one of the worst countries at keeping food out of the garbage. But what does this international issue look like on the smaller scale of a university campus? While both students and administrators at NKU have a stake in tackling the problem of food waste, taking action can be challenging with limited university resources and campus culture. By looking to other colleges as models for solutions, NKU can work towards advocacy, engagement, and the promotion of sustainability on campus and as a leader in our community.

### 200. Expressive Arts and Therapy

**TIFFANY GRAVES: Clinical Mental Health Counseling, Education and Human Services;** FACULTY MENTOR: Susannah Coaston; POSTER PRESENTATION

Sometimes individuals can struggle to express certain emotions and states of being in a therapeutic environment. Utilizing the expressive arts can give clients an alternative way to express these difficult experiences when regular talk therapy is not working. The arts open a whole new language for individuals to utilize in attempting to describe difficult emotions and states of being. This presentation describes the benefits of using the arts in a therapeutic environment to encourage growth and development.

### 201. Examining the Role that Iroquois Genes Play During Embryonic Development

**MARIA STEWART: Cellular/Molecular/Genetics, Biology, Arts and Sciences;** FACULTY MENTOR: Emily Shifley; ORAL PRESENTATION

My study focused on how the FGF pathway guides the development of the pharynx, an embryonic structure that gives rise to important craniofacial features in vertebrates. I analyzed the expression patterns of several FGF target genes to verify which stages these genes are expressed. One group of FGF targets, the Iroquois genes, are expressed in the developing pharynx. When we inhibited Iroquois in developing embryos and analyzed them with in situ hybridization, we saw changes in gene expression during development and defects in their craniofacial features. Overall, we have begun to characterize several FGF pathway targets in developing vertebrate embryos.

### 202. Arts Smarts

**ALEX SCHWIEGERAHT: Center for Applied Informatics, Computer Science, Informatics;** FACULTY MENTOR: Jill Henry; POSTER PRESENTATION

Art and language game that also serves as a tool for students to assign vocabulary words to art and teachers to analyze the results of students' choices. Arts Smarts is a game in which students log on, select the correct course, and complete their game of seeing a piece of art, assigning a term they choose, and describing why they chose that term. Before the revisions made during the current phase, there was no way for teachers to customize their courses and view their results; now teachers can look through individual or class results.

### 203. Various Tools for Quantifying Diffusion of a Model Analyte Set via Capillary Electrophoresis.

**CORBIN ARRASMITH: Chemistry, Arts and Sciences;** FACULTY MENTOR: Charlisa Daniels; ORAL PRESENTATION

The goal of this project was to investigate Polyaromatic Hydrocarbons (PAHs) series (Naphthalene through Chrysene), and thiourea using Capillary Electrophoresis (CE). These analytes were chosen to analyze the kinetics in an open capillary at room temperature and an adjusted temperature of 25°C, and mobile phase concentration of 75% acetonitrile:25% Tris base. This series and mobile phase were selected based on their use in previous studies in other publications. Furthermore polymers were then observed inside a 75µm ID capillary using an Scanning Electron Microscope (SEM) to determine porosity and overall size.

### 204. Unwrapping the Mystery

**ANNIE BOYTIM, RYAN CHITWOOD: Radiologic Science, Health Professions;**

**FACULTY MENTORS:** Jason Applegate, Trina Koscielicki; **POSTER PRESENTATION**  
NKU Radiology students created high-quality images using both x-ray and CT to view a cartonnage containing Umi, a 2,000-year-old mummy at the Cincinnati Museum Center. Little is known regarding the death or diseases that may have plagued Umi. Both the Museum and the Public History Department at NKU helped to produce these images of Umi, as well as several amulets that were buried inside. The Museum hopes to learn more about Umi's death from the images. Public History's will use the data to create holograms of Umi to benefit the Museum.

### 205. Violence and Bullying on College Campuses

**KELLY HEFLIN: Social Work, Education and Human Services;** FACULTY MENTORS: Caroline Macke, Kathryn O'Donnell; POSTER PRESENTATION

School violence can be presented in several different ways, and the harmful acts can range from intimidation and bullying, to physical fighting, rape or homicide. Research shows that bullying and school violence most often occur in elementary through high school, with little information on this topic in a college setting. This cross-sectional, self-administered survey will examine the prevalence of bullying and violence on NKU's campus, and is expected to show the negative impact it has on our students. The results will bridge the gap in research and give additional insight into how to better serve students' needs.

### 206. Norse Baja Student Design, Build, Competition

**NICK EHRMAN: Engineering / Technology, Arts and Sciences;** FACULTY MENTOR: Morteza Sadat; POSTER PRESENTATION

The Society of Automotive Engineers (SAE) is a professional organization for students interested in the mechanical engineering/technology field. This project is to simulate real-world engineering design and related challenges. Students involved are tasked to design, build, test, promote and race the vehicle according to the Society of Automotive Engineers rules. The vehicle must withstand severe rough terrains during the competition. Norse Baja team members are responsible to generate financial support for their project. This project reports on the design, manufacturing, project planning, and logistics of this project. The summary competition data related to the technical inspection for the 2019 car will be presented.

### 207. Word World: Gaming Grammar

**DANIELLE HEIERT, KENDRA DARBY, LAUREN BLUFORD, AUTUMN DRYER, RACHEL PIPES: English, Integrative Studies, Arts and Sciences;** FACULTY MENTOR: Tamara O'Callaghan; POSTER PRESENTATION

Although many people consider a strong command of English grammar to be essential for good written and oral communication skills, they often find learning grammar "rules" and applying them "correctly" in writing and speech to be a challenge. Our project is a design for a grammar game that will teach elementary school students grammatical terminology, syntax, and morphology. By travelling around the board, players collect parts of speech and use them to construct full sentences. By "playing" with grammatical concepts and their application, students will gain a better comprehension of and expertise in the grammatical structure of Standard American English.

### 209. Neurotransmitter Supplementation: Smart or Scam?

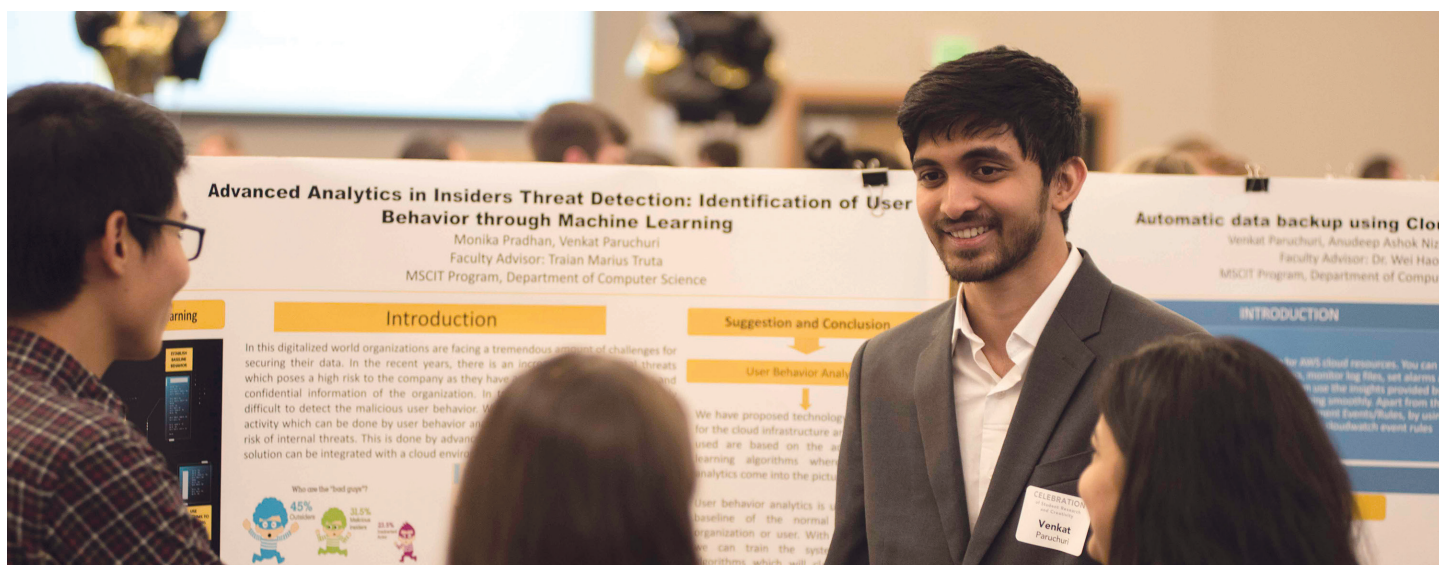
**LOGAN WAGNER: Biological Sciences, Honors Capstone, Arts and Sciences;** FACULTY MENTOR: Amber Onorato; ORAL PRESENTATION

The blood-brain barrier (BBB) plays an important role in maintaining homeostasis and preventing toxins from entering the brain. A restriction of the blood-brain barrier is its resistance to uptake various neurotherapeutic agents (ie GABA (Gamma-Aminobutyric Acid), glutamate, dopamine, and serotonin) when administered exogenously. All of these neurotransmitters have different effects on the body, but some, such as GABA, are sold over-the-counter as a dietary supplement. While the effects of GABA supplementation have not been elucidated or FDA-approved, new models of the human BBB could shed light on whether GABA supplementation is actually beneficial.

### 210. Identification and Optimization of Novel Small Molecule Inhibitors of mPGES-1

**LEAH C KOVALIC, SARAH KIRCHHOFF, TAYLOR GERREIN: Chemistry, Honors Capstone, Arts and Sciences;** FACULTY MENTOR: Amber Onorato; POSTER PRESENTATION

NSAIDs/coxibs are the most commonly used medications to relieve pain and inflammation. NSAIDs work by inhibiting COX-1 and COX-2, while coxibs selectively



inhibit COX-2. Long-term use of NSAIDs/coxibs have shown severe gastrointestinal and cardiovascular side effects. These cardiovascular events are now linked to the inhibition of COX-2-mediated PGI<sub>2</sub>. Thus, the inhibition of mPGES-1 has become a popular target as it selectively inhibits PGE<sub>2</sub> (a lipid mediator of inflammation) without inhibiting PGI<sub>2</sub>. The objective of this research is to develop and optimize lead compounds to obtain a selective mPGES-1 inhibitor with low nanomolar potency in vitro.

#### **211. Identification of Trm7 Residues Required for Trm732 and Trm734 Binding for tRNA Methyltransferase Activity in Yeast**

**ADRIAN R. GUY, ROSS SKEENS: Biochemistry, Chemistry, Biology, Arts and Sciences; FACULTY MENTOR: Michael P. Guy; POSTER PRESENTATION**

tRNA are molecules that transport amino acids to the ribosome for protein synthesis. Posttranscriptional modification of tRNA is necessary for proper cell growth. In yeast, proteins Trm7 and Trm732 form a complex modifying tRNAs at position 32, and, likewise, Trm7 and Trm734 modify tRNAs at position 34. To determine regions of Trm7 required for binding to Trm732 and Trm734, we are using site-directed mutagenesis of Trm7, followed by cell growth assays. In these assays, poor growth in a cell expressing a Trm7 variant indicates that the changed amino acid is involved in binding to Trm732 or Trm734.

#### **212. Depression: Current Prevalence and Awareness of NKU Counseling Services**

**ADAM HARRISON: Social Work, Education and Human Services; FACULTY MENTORS: Caroline Macke, Kate O'Donnell; POSTER PRESENTATION**  
Depression is growing in college students and can impact all aspects of a student's life. The numbers of students exhibiting symptoms of depression during their time in college is rising across the nation. This survey study of 200-300 NKU students is intended to determine what percent of students are currently experiencing symptoms of depression and their knowledge of the services provided by NKU to assist them in managing their depressive symptoms. The expected results of this study will give the profession of social work a better understanding of depression statistics at NKU and if counseling services are reaching these individuals.

#### **213. The Prevalence of Incarceration Rates among NKU Students**

**JULIE GRUPY: Social Work, Education and Human Services; FACULTY MENTORS: Caroline Macke, Kate O'Donnell; POSTER PRESENTATION**

Of the millions of people incarcerated in this county, annually 636,000 are released back into society. Within the first year of being released, 44% are rearrested. Research indicates that incarcerated individuals who pursue higher education have reduced rates of recidivism. This survey will use non-probability and purposeful sampling to collect data from 300-400 Northern Kentucky University students. This survey is intended to examine the prevalence of past incarceration among the student body. The results of this study are expected to show some of the student body has experienced incarceration thereby illustrating the need for programs regarding re-entry within college universities.

#### **214. Identification of Residues Required for Trm734 tRNA Modification Activity in Yeast**

**HANNAH SIZEMORE, DAISY DIVITA, NICHLAS SEBREE: Biochemistry, Chemistry, Arts and Sciences; FACULTY MENTOR: Michael Guy; POSTER PRESENTATION**

Transfer RNAs are molecules that transport amino acids to the ribosome to facilitate protein synthesis. Modification of tRNAs is critical for proper functioning. Two significant modifications are the 2'-O-methylation of nucleotide 32 (Cm32) and nucleotide 34 (Nm34) in tRNA<sup>Phe</sup>. These modifications are formed by the protein Trm7 and its accessory proteins Trm732 and Trm734. Single mutants lacking TRM732 or TRM734 are healthy; though double mutants lacking both are sick, indicating they are necessary for cell survival. To better understand the function of these proteins, site-directed mutagenesis, followed by UPLC analysis, will be utilized to identify regions of importance in Trm734.

#### **215. The Prevalence of Food Insecurity among NKU Students**

**HAILEY RIEGLER: Social Work, Education and Human Services; FACULTY MENTORS: Caroline Macke, Kathryn O'Donnell; POSTER PRESENTATION**

Food insecurity is a serious public health challenge on college campuses. It can inhibit a student's academic performance. This IRB approved study examines the prevalence of food insecurity among NKU students as well as its physical, mental, educational, and social outcomes. A brief and voluntary five-minute survey was used to collect data. The expected results will show that food insecurity is prevalent on our campus and that it does impact academic outcomes. These findings will help NKU better understand how the university can improve the support they offer for students.

#### **216. Dating Violence among NKU Athletes**

**CARLY MARTIN: Social Work, Education and Human Services; FACULTY MENTORS: Caroline Macke, Kate O'Donnell; POSTER PRESENTATION**

Dating violence is a significant social problem affecting 1/4 of women and 1/9 of men nationally. This study is designed to determine the prevalence of dating violence occurring among NKU student athletes. Due to the high rate of dating violence, it is important to examine the prevalence among NKU students, especially student athletes since minimal information is known about this demographic. A self-administered survey will be used to collect data from students. This research will give a better understanding on how student athletes are being affected by dating violence. It is expected, the prevalence will be less than the national averages.

#### **217. Illicit Opioid Use at NKU**

**ALEXIS MUSE: Social Work, Education and Human Services; FACULTY MENTORS: Caroline Macke, Kathryn O'Donnell; POSTER PRESENTATION**

Illicit opioid use by students is becoming increasingly problematic in universities throughout the United States. The purpose of this research is to determine how extensively illicit opioid use is affecting students' academic performance. This issue

is significant because of the effect it has on universities. The current study used 277 surveys to gather information on students' opioid use and how that relates to their academics. Expected results will show that students who use opioids have significantly lower academic performance. Findings will be used to advocate for additional resources to combat this issue.

#### **218. What is the Prevalence of Illicit Stimulant Use among NKU Students, and How are They Acquiring Those Stimulants?**

**GABRIEL TROLLINGER: Social Work, Education and Human Services; FACULTY MENTORS:** Caroline Macke, Kate O'Donnell; POSTER PRESENTATION  
This study researched the illicit use of prescription stimulants by U.S. college students. This practice has detrimental psychological and cardiovascular consequences. According to SAMHSA, 11.4% of persons 12-25 years old have used prescription drugs illicitly. There is no data specific to NKU on this issue. This study utilized a self-administered 5-minute survey that collected data from over 150 NKU students. The data analyzed will illuminate the prevalence of illicit stimulant use among NKU students, and how they access stimulants. This data could be useful in helping social workers develop support infrastructure at NKU for this problem.

#### **219. Does Housing Insecurity Increase Chances of Dropout Ideation among College Students**

**CHARLES SHAFFER: Social Work, Education and Human Services; FACULTY MENTORS:** Caroline Macke, Kathryn O'Donnell; POSTER PRESENTATION  
In reviewing relevant literature, it is shown that well over 50,000 students under the age of 21 applying for federal aid identified to be struggling with housing insecurity issues. Considering this, our study aims to analyze the relationship between housing insecurity and dropout ideation through an experiment in which surveys are randomly distributed to students at the Student Union building on NKU's campus. The formal question proposed for this study is whether or not housing insecurity increases the chances for dropout ideation among college students. This research is intended to highlight the importance of student housing insecurity.

#### **220. Bullying/Cyberbullying among NKU Students**

**KAYLA HAUSFELD: Social Work, Education and Human Services; FACULTY MENTORS:** Caroline Macke, Kate O'Donnell; POSTER PRESENTATION  
Bullying/Cyberbullying has a lasting affect on individuals that tends to be overlooked on college campuses. Many may believe that bullying/cyberbullying stops once students graduate high school. The purpose of research is to show NKU the affects bullying/cyberbullying has on student's social and academic well being. The significance of research is to show that bullying/cyberbullying has a negative affect on student's that attend NKU. Data was collected with a 5 min survey to approximately 300 NKU students. Research will help NKU be more proactive with students. Findings are expected to show how many NKU students have been affected by bullying/cyber-bullying.

#### **221. A Computational Study of Mitragynine**

**DONNA ODHIAMBO: Chemistry, Arts and Sciences; FACULTY MENTOR:** Patrick M. Hare; POSTER PRESENTATION  
Mitragynine is the active ingredient in the herbal extracts of the plant *Mitragyna speciosa* (kratom). It can be a drug of abuse, but is also being studied for use in the treatment of opioid withdrawal. With potential increased use, it is important to know how the molecule will react to light, both because it is desirable that drugs are stable and because they can end up in the environment where photodegradation is possible. We have calculated the excited state energies of mitragynine to start understanding its interactions with light.

#### **222. The Indian Removal Act of 1830 and How it Changed U.S. Policy towards Native Americans**

**JAMES HARRINGTON: History, Arts and Sciences; FACULTY MENTORS:** Andrea Watkins, Brian Hackett; ORAL PRESENTATION  
The Indian Removal Act of 1830 marked a significant change in United States policy towards Native Americans. The federal government had a complicated and sometimes hostile relationship with Native Americans. Prior to the 1830 Removal Act, the United States followed the Civilization Policy, which involved treating Native Americans nations as independent nations and respecting their boundaries. After the passage of the act, the United States treated Native American nations as subjects. This presentation examines the pre-1830 policy and those events and

people that led to a distinct change from compromise to domination in Native American negotiations and policies.

#### **223. Prevalence of Illegal Drug Use on Northern Kentucky University DIAMOND HALL: Social Work, Education and Human Services; FACULTY MENTORS:** Caroline Macke, Kathryn O'Donnell; POSTER PRESENTATION

This research is related to social work to acknowledge how illegal drug use is a big concern nationally and on NKU's campus. Drug use has many negative ramifications for college students including declining health, academic, and social outcomes. The current IRB approved study seeks to examine the prevalence of drug use among NKU students. A 5 minute self-administered survey will be used to assess for drug use. Findings are expected to show that drug use is common among NKU students, similar to national.

#### **224. What Coping Techniques are NKU College Students Using to Manage Their Anxiety?**

**MARJ'OHNNNA HARRIS: Social Work, Education and Human Services; FACULTY MENTORS:** Caroline Macke, Kate O'Donnell; POSTER PRESENTATION  
Evidence shows that many college students suffer from anxiety. Many students are impacted by this disorder and seek to alleviate their symptoms in various ways. Students may tend to cope with their anxiety through illicit substance use, healthy lifestyle changes, and/or a cognitive approach. This qualitative study seeks to examine the way Northern Kentucky University students cope when they are dealing with their anxiety. A 5-minute self-administered survey will be used. The results of this study are expected to show the social work profession and colleagues that NKU students use a variety of healthy and unhealthy coping strategies.

#### **225. Discrimination and Politics**

**MIKE PHILLIPS: Social Work, Education and Human Services; FACULTY MENTORS:** Caroline Macke, Kate O'Donnell; POSTER PRESENTATION  
Research suggests that acts of discrimination have increased as a result of the current political climate. The current study seeks to examine the relationship between the current political climate and acts of discrimination perpetrated against NKU students. A brief self-administered survey will be used to assess for acts of discrimination. The results from this IRB approved study are expected to show that there has been an uptick in discriminatory acts on our campus, and that students attribute this increase to the current administration. These findings can assist social workers in advocating for necessary resources to promote an inclusive environment.

#### **226. The Effects of Trauma**

**RACHEL RAMSEY: Social Work, Education and Human Services; FACULTY MENTORS:** Caroline Macke, Kate O'Donnell; POSTER PRESENTATION  
Trauma is a psychological response to an event that is deeply distressing to a person. There has been little research done on the prevalence of trauma among college students. Trauma can result in a lower GPA, dropping out of college, lack of self-efficacy, lack of motivation in their classes, and alienating themselves from others. This cross-sectional study, which uses a brief survey, will examine the prevalence and academic impact of trauma among NKU students. Findings will show that trauma is common and has negative academic consequences. Results will help social workers to advocate for resources on NKU's campus.

#### **227. JR's Photographic Lens: Giving a Voice to the Voiceless**

**ELI TERRY: World Languages and Literatures, Arts and Sciences; FACULTY MENTOR:** Gisèle Lorient-Raymer; ORAL PRESENTATION  
From the beginning of time, humans have used art as a form of self-expression. Art has the power to evoke strong emotions from its audience, and even be a catalyst for change. My research examines the work of French artist JR, who uses art not only as an expressive medium, but to provide a voice to the voiceless. Through his many installations, JR has given marginalized people across the globe a platform, and he has ultimately extended his authority as an artist to individuals and groups providing the means for them to create their own works of activism.

#### **228. Comparing Effects of Different Models of Addiction on Attitudes Toward Opioid Use Disorder (OUD)**

**MALLORY EILERMAN: Psychology, Honors Capstone, Arts and Sciences; FACULTY MENTOR:** Perilou Goddard; ORAL PRESENTATION  
Opioid use disorder (OUD) is a significant threat to public health, and solutions



are urgently needed. This research explores how contrasting explanations for OUD (brain disease model versus developmental learning model) may impact stigmatizing attitudes toward evidence-based responses to the disorder. I will administer an online survey to approximately 300 U.S. residents, I hypothesize that perceived control over opioid use will be the strongest predictor of stigmatizing attitudes, and I will investigate the extent to which the explanatory models then predict perceived control. This research may have implications for reducing OUD-related stigmatization and increasing support for evidence-based practices.

### 229. The Utilization of Disability Services on NKU's Campus

**GABRIELLE RUEHLMAN: Social Work, Education and Human Services; FACULTY MENTORS:** David Wilkerson, Suk-hee Kim; POSTER PRESENTATION

Research shows that students with a disability are less likely to get a college degree than students without a disability. For this study, disability was defined as a mental, physical, or cognitive condition that impairs an individual's performance of daily activities. NKU provides a Disability Services program aimed at assisting students with needed supports and accommodations. This study looks at the extent to which NKU Disability Services are utilized by eligible students. Findings from this research are expected to demonstrate that these services are under-utilized by students with disabilities.

### 230. Perceptions of Student Success

**FANTASIA MEJIA: Anthropology, Honors Capstone, Arts and Sciences; FACULTY MENTOR:** Douglas Hume; POSTER PRESENTATION

This research examines Chin and non-Chin perspectives of student success at Dixie Heights High School. The Chin are a local community of settled refugees from Myanmar (formerly Burma). Students were interviewed on their perceptions of how they define success as well as who they feel is supportive, which will then be analyzed for differences and similarities between Chin and non-Chin students. The results of this research will aid Dixie Heights High School to better understand and serve their students' needs.

### 236. The Power of Words: Lessons from Caribbean Literature

**JENNA WALLIN: Spanish, Arts and Sciences; FACULTY MENTORS:** Iliana Rosales Figueroa, Gisèle Lorient-Raymer; ORAL PRESENTATION

This project synthesizes the messages conveyed by Francophone and Hispanophone Caribbean authors whose works portray the profound impact of words on both individual and collective identities. It consists of a visualization of Caribbean islands shaped by words and surrounded by quotes, prayers, letters, insults, praises, names, silenced voices, and poems. All of these mediums helped both the authors and their audiences heal and communicate. My own reflections on the topic and my creative project are an attempt to initiate a conversation for justice.

### 237. Ethnographic Research on Child Labor in Northern Belize

**RACHAEL HAUPT, KARIN FLOYD, AUTUMN GILBERT, FANTASIA MEJIA: Anthropology, Arts and Sciences; FACULTY MENTOR:** Douglas Hume; POSTER PRESENTATION

This poster presents ethnographic data on child labor collected during the summer 2018 Ethnographic Field School in Belize. We interviewed 291 informants in three different communities about ages appropriate for different jobs and why children work. The average age informants believed children should begin working ranged from the ages of 10.7 and 16.3 for each of the different jobs. The most common reason for child labor is family poverty. This poster documents our findings for both ages appropriate for each job as well as the reasons for why children work.

### 238. C++ and Python Object Oriented Programs to Perform Data Extraction and Correlation for ISS-CREAM Project

**BRENT SCHLEPER, TOBEL ATNAF: Computer Science, Informatics; FACULTY MENTOR:** Scott Nutter; POSTER PRESENTATION

Cosmic Ray Energetics and Mass (CREAM) is an instrument on the International Space Station designed to detect cosmic rays at high energies. There are multiple input data streams: science data, instrument health monitoring (housekeeping), times of South Atlantic Anomaly passage (SAA), pedestals, and several types of calibration files. Text files are parsed to extract relevant data. We developed programs that use inheritance to correlate the different data streams by timestamp. Our final output is a ROOT tree that incorporates variables from the raw files for each day the instrument sends data.

### 239. Standardizing IoT Security through the Use of a Dedicated Security Hub

**TRAVIS FLETCHER: Cybersecurity, Data Science, Informatics; FACULTY MENTOR:** Rasib Khan; POSTER PRESENTATION

The ever-increasing popularity of IoT devices has been consistently met with security concerns. By introducing a dedicated device that implements industry-proven security practices between IoT devices and the internet, dependence on manufacturers to properly secure their devices is eliminated. We introduce the concept of the Security Hub, a middleware, to manage all inter-device communication and ensure devices obtain timely updates. Our empirical studies based on a prototype implementation ensured minimal communication overhead and reliable updating of the IoT devices, even under heavy load. With proper manufacturer adoption, this could greatly reduce the security risk of IoT devices on a network.

### 242. The Effects of Active vs Passive Stretching on Sprint and Reaction Time for Collegiate Track Athletes

**TYLER TURNER, HANNAH ADKINS, HANNAH THOMAS, RYAN SANDOVAL, KYLE HOSKINS: Athletic Training, Education and Human Services; FACULTY MENTOR:** Rachele Vogelphohl; POSTER PRESENTATION

A desired trait among track athletes is a fast reaction time from the starting blocks. It can be a predictive factor of the outcome of the race. The purpose of this study is to determine the effect of active vs passive stretching on collegiate track athletes' reaction time off the starting blocks. Participants will be introduced to active and passive stretches prior to completing a 30 meter sprint. The athletes' reaction time to the start signal and the time off the blocks will be recorded and analyzed.

### 243. Frequency of Sexual Assault on NKU's Campus

**OLIVIA WININGS: Social Work, Education and Human Services; FACULTY MENTORS:** Caroline Macke, Kate O'Donnell; POSTER PRESENTATION

Sexual assault is a worldwide problem among college students. It affects all aspects of a student's health possibly leading to barriers academically. This study elaborates on sexual assault, focusing on how aware students are of the frequency of sexual assault on NKU's campus. The study utilized a five minute survey to collect data from NKU students. It is anticipated that the results will show that students do not believe Sexual Assault is common at NKU. The findings will also allow NKU to improve services.

### 245. Investigating New Methods for Monitoring Nature Trail Usage

**RICHARD OSBORNE: Biological Sciences, Arts and Sciences; FACULTY MENTORS:** Richard Durtsche, Gang Sun; POSTER PRESENTATION

Our study analyzes the deployment of an infrared motion sensor on the trails of the NKU Research and Education Field Station. We hypothesize that such a device could be a cost-effective and non-invasive alternative to existing methods of monitoring trail usage. Determining the effectiveness of this apparatus and analyzing the data it provides will facilitate an improved understanding and management of trails used by humans and wildlife in preserved natural areas.

### 246. Using Digital Imaging to Compare Stream Macroinvertebrate Populations across Different Biomes

**RACHEL PROKOPIUS, ABBY NIENABER: Biological Sciences, Arts and Sciences; FACULTY MENTOR:** Richard Durtsche; POSTER PRESENTATION

Stream macroinvertebrates are often assessed based on their contribution to biomass and energy content. Due to the different taxa morphologies, standard length-mass measurements are not a highly accurate size determination. This study used digital imaging to establish surface to area mass ratios for macroinvertebrate taxa from tributaries in Varmland, Sweden and Northern Kentucky. Macroinvertebrates were collected from stream tributaries, and live samples were sorted, identified, digitally imaged, and preserved in either ice or ethanol before being reimaged and dried to a constant mass at 65°C. Findings suggest surface area as an accurate size measurement, and preservation generally does not affect macroinvertebrate measurements.

### 247. Refining Measurements of Types of Chromosomal Instability through a Newly Marked Chromosome

**MAURA BENNETT: Biology, Arts and Sciences; FACULTY MENTORS:** Erin Strome, Kellyn Hoffer; POSTER PRESENTATION

Chromosomal instability is a significant factor in the development of cancers. This project utilizes *Saccharomyces cerevisiae* to construct a new genetically marked

chromosome XII which will enable enhanced measurement of chromosomal instability events. This new diploid strain, with a multiply marked and mapped chromosome XII, allows us to use these genetic markers to determine the type of instability and the location of the changes. Because of the similarities between yeast and human cells we can utilize this strain to learn more about instability events that might be associated with cancer.

#### 248. NKU Student Experience with Sexual Harassment

**SUMMER FLETCHER: Social Work, Education and Human Services; FACULTY**

**MENTORS:** Kathryn O'Donnell, Caroline Macke; **POSTER PRESENTATION**

Sexual harassment has been one of the most discussed issues of 2018. A nationally representative survey showed that 81% of women and 43% of men in America have experienced sexual harassment or sexual assault. This cross-sectional survey will use non-probability sampling to collect data from 200-300 Northern Kentucky University students. This survey is intended to examine the prevalence of sexual harassment at NKU. The results of this study are expected to illustrate that a substantial part of the student body has experienced sexual harassment. These results could encourage administration to develop further programming.

#### 250. Central Alaska Lithospheric Modeling in Three Dimensions

**THOMAS MEYER, TROY SAUNDERS, MACKENZIE NELSON: Geology, Geophysics, Arts and Sciences; FACULTY MENTOR:** Nilesch Dixit; **POSTER PRESENTATION**

Despite high levels of seismicity in central Alaska, underlying processes responsible for triggering intraplate earthquakes are poorly understood. This one-year project is focused on developing a robust 3D crustal model that delivers a better understanding of intraplate earthquakes in this region. Three undergraduate students are currently working on and addressing different aspects of central Alaska—historic earthquakes and related ground deformation, and lithospheric rheology of the crust. The resulting 3D crustal model should allow accurate seismic hazard assessments for central Alaska, which can be applied to world-wide analogs.

#### 252. Statistical Methods for Healthcare Research

**PARKER KAIN: Statistics, Arts and Sciences; FACULTY MENTOR:** Joseph Nolan; **POSTER PRESENTATION**

Advances in medical techniques are best studied through the implementation of statistical methods. These provide population inference that can be applied in the context of many areas of medicine including surgical outcomes, medication use, etc. A large part of analysis is initial data management and preparation. This is followed by methodology appropriate to the variables measured. The statistical analysis allows generalization from the sample to the population at large. This poster describes work performed at the Burkardt Consulting Center in partnership with local physicians.

#### 253. Using Twitter Streaming API for Fake News Data Collection

**PARKER KAIN, TOBEL ATNAFU: Computer Science, Data Science, Informatics; FACULTY MENTORS:** Marius Truta, Alina Campan; **POSTER PRESENTATION**

We investigate how to use Twitter for collecting and analyzing fake news tweets. First, we study the reliability of Twitter data collection when Streaming API with filtering is used for general terms, not necessarily related to fake news. Second, we collect tweets containing fake news and related real news during the same time period. Next, we investigate similarities and differences in the volume and content of related fake and real news tweets.

#### 254. Energy Determination in the ISS-CREAM Instrument Using Simulations

**TYLER LABREE: Physics and Mathematics, Arts and Sciences; FACULTY MENTOR:** Scott Nutter; **POSTER PRESENTATION**

The ISS-CREAM instrument was launched to the International Space Station in August of 2017 to study the elemental composition of cosmic rays, which permeate the galaxy. The calorimeter (CAL) is one of four detector systems, and consists of 20 layers of tungsten and scintillating fibers. Each layer is one electromagnetic radiation length thick. The CAL determines the particle energy by measuring the fraction of the shower energy deposited in the scintillating fiber. Computer simulations are essential in understanding what fraction of total shower energy is deposited, and with what accuracy the original particle's energy can be determined.

#### 255. Integrated Modeling and Geophysical Evaluations of Floods in Kentucky

**JUSTIN OWENS, CAMERON PETERSON: Geology, Geophysics, Arts and**

**Sciences; FACULTY MENTORS:** Nilesch Dixit, Sarah Johnson; **POSTER PRESENTATION**

The main goal of this project is to develop and apply innovative satellite data modeling and visualization methodology that would allow generation and embedding of accurate flood risk time-series maps into real-world scenes with substantially reduced false flood alarms. The resulting flood extent maps will be integrated with national water models to test the accuracy of FEMA's existing flood forecast models and to further make recommendations for reducing false flood alarms in Kentucky.

#### 257. Of Forjs and Chaynces

**MEGAN HODORY: Integrative Studies, Honors Capstone, Arts and Sciences;**

**FACULTY MENTOR:** Stephen Leigh; **ORAL PRESENTATION**

I wanted to embed my own perspective into a world that is different from reality. I do not expect to expand the field in any drastic way since this is a new methodology for me, but I hope that some aspect of the final product will stay with anyone who reads it. The basic plot is that two main characters who are strangers to each other have to work together to complete a ritual so they can get back to their respective homes. I am meeting with a professor in the English department weekly to review my progress.

#### 258. The Northerner 2018-19

**SAM ROSENSTIEL: Journalism, Informatics; FACULTY MENTOR:** Michele Day; **POSTER PRESENTATION**

In the 2018-19 academic year, *The Northerner* dove deeper into campus safety, declining enrollment, student loan debt, sexual harassment reporting, Black history, eating disorder resources, and more. *The Northerner* is an independent student news organization that covers the human stories of NKU students, faculty, staff and community. In news, arts & life, sports and viewpoints, *The Northerner* strived to cover a diverse campus from multiple perspectives. In this project, we will demonstrate why our reporting resonated with readers and the wider community, using viewer data on our award-winning photos and stories.

#### 259. Echo-State and Gradient-Based Deep Learning Models for Diagnosis of Parkinson's Disease

**PARKER KAIN: Data Science, Informatics; FACULTY MENTOR:** Kevin Kirby; **POSTER PRESENTATION**

Reservoir Computing had been introduced in the 1990s as an alternative to trainable recurrent neural networks for sequential tasks. In recent years, due to advances in deep learning, there has been great progress on sequential tasks, in conjunction with new high performance computing architectures such as Gated Recurrent Units. In this research, we examine reservoir computing in the light of these new advances including deep reservoir computing as well as combining it with newer gradient-based approaches. We explore this through a dataset applied to the diagnosis of Parkinson's disease.

#### 260. The Effects of Exercise on Brain-Derived Neurotrophic Factor in Mice

**EMMA FOSTER: Neuroscience, Arts and Sciences; FACULTY MENTOR:** Christine Perdan Curran; **POSTER PRESENTATION**

Brain-derived neurotrophic factor (BDNF) is a key signaling protein required for normal brain development and function. Aerobic exercise has been demonstrated to have multiple benefits for brain function and behavior, including improved cognitive performance and reduced stress. To determine if these benefits were mediated by increased BDNF levels, we measured baseline BDNF levels in male and female mice then allowed the mice to exercise using running wheels for one hour per day for one week. Post-exercise BDNF levels were measured to determine if they were significantly different from baseline levels.

#### 261. Genetic Differences in Neurological Development in Mice Exposed to Benzo[a]pyrene Exposure during Late Gestation and Lactation

**CHELSEA BALDWIN, ASHLEY PARTON, YVONNE SENE, IAN RIVERA, LISA MASSIE: Neurotoxicology, Biology, Environmental Science, Neuroscience, Arts and Sciences; FACULTY MENTOR:** Christine Perdan Curran; **POSTER PRESENTATION**

The effects of traffic-related air pollution (TRAP) on lung function and heart health are well known, but there is emerging evidence that TRAP also harms the developing brain. Based on previous work indicating that Cyp1a1(-/-) knockout mice were more susceptible to fetal loss and DNA adducts following maternal exposure to the PAH benzo[a]pyrene, we extended our findings to neurobehavioral outcomes. Pregnant mice with the Cyp1a1(+/-), Cyp1a1(+/-) or Cyp1a1(-/-)

genotypes were treated with from gestational day 10 through weaning at postnatal day 25. Offspring were tested as neonates before weaning and as adults at P60.

## **262. Small and Efficient Messaging System (SEMS): Context Sharing Using a Probabilistic Data Structures**

**BENJAMIN GOODER: Computer Science, Informatics; FACULTY MENTOR:** Samuel Cho; ORAL PRESENTATION

SMS has been used for sharing context information between IoT devices, however, the transferable payload size of a single message is limited. Though efforts to reduce context size are popularly made with compression algorithms, their effectiveness is undependable. We present SEMS (Small and Efficient Messaging System) to reduce the footprint of context information. SEMS uses a probabilistic data structure to significantly increase context representation size efficiency despite a slight decrease in data quality. Our system and findings imply promising benefits in easing IoT devices' data storage requirements.

## **263. Phenylethynloxalixarenes: A First Step Toward Annulene-Oxalixarene Hybrids**

**ANNA VERNIER: Organic Chemistry, Chemistry, Arts and Sciences; FACULTY MENTOR:** K.C. Russell; POSTER PRESENTATION

The goal of this work is to synthesize annulene-oxalixarene hybrids which exist in a tweezer-like conformation with cofacial annulenes. These molecules will provide insight on the interactions of cofacial aromatic and antiaromatic rings. Before these hybrids can be synthesized, various analogues of *p*-substituted phenylethynyl-*o,m,o,m*-oxalix[4]arenes must first be synthesized. These target oxalixarenes will have substituents ranging from strongly electron withdrawing to strongly electron donating. We have found two methods to this synthesis; one which allows for the addition of the electron donating groups, and the other potentially allowing for the addition of the electron withdrawing groups.

## **264. Predicting Students Dropout Rate using Convolutional Neural Networks**

**SANJANA REDDY BASANI, RAKESH CHENNA REDDY VANGAVARAGU: Computer Science, Computer Information Technology, Informatics; FACULTY MENTORS:** Anthony Tsetse, Seth Adjei; POSTER PRESENTATION

In this paper, we represent student GPA data over four or more semesters using a grayscale image. Each pixel in the image represents a grade point of a student in a given course of a semester. We use Convolutional Neural Networks (CNNs) to analyze that image and determine whether students will finish the program successfully or will drop out prior to program completion. TensorFlow is used to implement the CNN classification technique. The results of this experiment will be useful to instructors and advisors to guide students in course selection. This would help students find their field of interest.

## **265. Center for Applied Informatics Annual Report**

**SARA HUGHES: Visual Communications Design, Arts and Sciences; FACULTY MENTOR:** Jill Henry; POSTER PRESENTATION

The annual report is a yearly publication that is designed for the university and the community stake holders. Readers gain insight into the Center for Applied Informatics' fiscal year through a variety of images and articles. The report contains a letter from the Executive Director, the CAI's mission, our vision and values, and a breakdown of the impact the program has had. Through infographics, interviews and statistics, the annual report highlights the collaborative research and virtual co-ops. These publications have been instrumental in helping the CAI to continue providing businesses and students with opportunities to create long-term economic value.

## **266. Fitting Keplerian Orbits using Markov-Chain Monte Carlo Methods**

**KENDRA HERWECK: Physics, Arts and Sciences; FACULTY MENTOR:** Nathan De Lee; POSTER PRESENTATION

ExoFastV2 is an exoplanet transit, radial velocity (RV), astrometry, and stellar fitting software package in IDL. This package is designed to fit high quality Keplerian Orbits to these astronomical data. We are currently testing this software on simulated RV curves using a mock catalog with RV curves similar to SDSS APOGEE survey. We discuss our initial results with a particular focus on how well we recover orbital periods as a function of parameter space.

## **273. Self-Compassion as a way to reduce Depressive Symptoms**

**LAKEN GINN: Social Work, Education and Human Services; FACULTY MENTORS:**

Caroline Macke, Kathryn O'Donnell; POSTER PRESENTATION

Mental illness is a growing concern on college campuses nationwide as more students seek mental health treatment. The purpose of this research is to determine if one's level of self-compassion is correlated to an individual's self-reported depressive symptoms. This researcher predicts that individuals with higher levels of self-compassion will have less self-reported depressive symptoms. If this relationship does exist, it would help inform how the profession provides services to individuals presenting with depressive symptoms, particularly those seeking treatment on college campuses. Methodology: A cross sectional study, with purposive sampling that have been approved by the IRB.

## **274. Leader Roles for Women in Saudi Arabia**

**SHAKHAH ALMUZAYYEN: Organizational Leadership and Psychology, Arts and Sciences; FACULTY MENTOR:** Megan Downing; POSTER PRESENTATION

Women in Saudi Arabia have been having trouble progressing in the workplace. In recent years, there have been advances in the country which have pushed women to enroll in college and pursue their careers. Despite this, Saudi Arabia is behind most of the world regarding gender equality in the workplace. This is primarily due to cultural and religious factors that see women as less able than men to handle responsibilities and make decisions. The program Vision 2030 is a Saudi legislative initiative that intends to achieve gender equity and diversification of the economy by incorporating more women in the workforce.

## **275. The Northerner Photos 2018-19**

**COLIN JOHNSON, EMERSON SWOGER: Journalism, Exercise Science, Photography, Health Professions, Arts and Sciences; FACULTY MENTOR:** Michele Day; POSTER PRESENTATION

The photography students at *The Northerner* use their creative expertise to capture and design images that tell the stories of the NKU campus. Year highlights range from covering student activities and campus construction to following NKU sports teams on their journey's through their seasons. The Northerner's Photography staff took home a variety of awards this year from the College Media Association and Kentucky Press Association.

## **276. Photosensitizer and UVA Treatment of Fungi**

**ASHLEY WENTWORTH: Microbiology, Arts and Sciences; FACULTY MENTOR:** Joseph Mester, Alan Cohen; ORAL PRESENTATION

Fungi cause a variety of problems in the medical, agricultural, and veterinary fields. Fungi such as *Penicillium*, *Aspergillus*, and *Fusarium* can grow in food products and produce toxins which can be consumed by humans or animals. However, there are many natural compounds that may be used safely in the environment to control fungal growth. Our previous data have demonstrated that combinations of a natural photosensitizer and ultraviolet (UVA) light can reduce the viability of fungal spores. This project analyzes new photosensitizers capable of decreasing spore germination and the vegetative growth of fungi when used in combination with UVA treatment.

## **278. Implementation of Smart Contract**

**YVES-ALAIN MISA NZWANGA, DHARMANG HANSALIYA, DONALD DAVIS:**

**Computer Science, Computer Information Technology, Informatics; FACULTY MENTOR:** Anthony Tsetse; POSTER PRESENTATION

In this paper, we implemented the architecture for a Smart Contract software, which works on blockchain technology. In addition, we discussed technologies used in the implementation of our system. Smart contracts have the benefit of speed, real-time updates, accuracy, lower execution risk, fewer intermediaries, lower cost, and new operational models. Since blockchain traditionally depended on mining to add transaction onto a ledger which was time consuming and required a lot of resources, we implemented an infrastructure which is mining free. Integrating blockchain technology with a traditional contract brings all the advantages of blockchain into contracts.

## **279. Substance Abuse among NKU students**

**MAKDA MEHARI: Social Work, Education and Human Services; FACULTY MENTOR:** Kate O'Donnell, Caroline Mackey; POSTER PRESENTATION

Substance Abuse is a significant social problem nationally, and on college campuses in particular. It leads to many negative consequences including physical, mental, behavioral and academic ramifications. The current study seeks to examine the prevalence and consequences of substance abuse among NKU students. A



brief self-administered survey will be used. This IRB approved study is expected to show that NKU students are abusing substances at rates comparable to the national average and that this substance abuse is resulting in negative consequences. Findings will be used to advocate for more resources related to substance abuse.

**280. Exploring the Effects of Nature Exposure on Measures of Pain**  
**LAUREN HAWLEY, JESSICA RAINES, ONYINYE UWOLLOH: Psychology, Arts and Sciences; FACULTY MENTORS: Kathleen Fuegen, Kimberly Hanson Breitenbecher; POSTER PRESENTATION**

This study compared the effectiveness of pleasant nature images, pleasant non-nature images, and a no-image control in reducing cold pressor pain. During each session, participants experienced one of three conditions: viewing a slideshow of pleasant nature images, viewing a slideshow of pleasant non-nature images, or reading a passage of text. Then the participant submerged her hand into a basin of water (4 degrees Celsius). The researcher recorded each participant's pain threshold, tolerance and perception recorded. Pain distress was greater in the control condition than in the non-nature images condition. Pain threshold, tolerance, intensity, and unpleasantness did not differ by condition.

**281. Design and Implementation of Intelligent Shopping Agent using Machine Learning**  
**SAI AKHIL PRABHAT ONGOLE, DEEKSHITA KADABOINA: Computer Science, Computer Information Technology, Informatics; FACULTY MENTOR: Anthony Tsetse; POSTER PRESENTATION**

With rapid evolution of technology, ever increasing demand for highly personalized shopping. Customers expect their shopping experience to be meaningful. Present e-commerce websites help customers via their search engine recommendations. Our system presents customers with a more tailored and personalized shopping predictions with accuracy when they are ready to shop. In this paper, we discuss the architectural design and implementation of a prototype intelligent shopping assistant that applies machine learning to understand users shopping pattern and predicts their shopping list. The proposed system is implemented as an application using multiple database technologies and Amazon Web Services.

**283. The Sixth Man: Developing Gameday Atmosphere through Consistency and Structure**

**RANDY CLARK: Honors, Honors Capstone, Informatics; FACULTY MENTOR: Danielle Todd; ORAL PRESENTATION**

NKU's basketball program has seen major growth, but the audience culture isn't growing with it. The energy and encouragement provided by the crowd helps our teams feel more confident and puts pressure on our opponents, a phenomenon referred to as "the sixth man." By strengthening traditions, we strengthen not only "the sixth man," but our school as a whole. I worked with the NKU Pep Band to encourage and promote a spirited school culture that will grow with the help of new policies for the Pep Band, new school cheers and increased communications with other spirit groups.

**285. An Alexa Skill for Home Inventory Management**  
**BRANDI MALDONADO REINHARD: Business Informatics, Informatics; FACULTY MENTOR: Brandi Neal; POSTER PRESENTATION**

Many consumers have at least one large collection of items, such as movies, tools or books, in their homes for which keeping an accurate inventory is challenging. The Alexa skill created for this project will make it easier to search, add or delete household items from an inventory list using only voice commands. My project will utilize Application Programming Interface (API) databases available online as a software intermediary enabling apps, such as Alexa, to interact and exchange data. Skill users can search for an item using Alexa which will report back if it is in their current inventory.

**286. Line Following Robot**  
**ANUSHA TIMLA: Mechanical and Manufacturing Engineering Technology, Arts and Sciences; FACULTY MENTOR: Zeel Maheshwari; ORAL PRESENTATION**

Robots are designed to replicate human actions and make life easier. Line following robot normally follows a path after recognizing it and tends to move in this direction without falling off or getting on the wrong track. They can be controlled using two sensors namely proximity & IR sensor. Further, the entire device can be controlled using microcontrollers. These robots can be used in

various industries, field works and for delivery services. They can possess additional features such as obstacle detector, security systems and may help in domestic purposes too such as picking leaves in a garden and automate vacuum cleaner.

**287. An Exploration into System Administration**  
**GEORGE HAGAN: Computer Information Technology, Honors Capstone, Informatics; FACULTY MENTOR: Scot Cunningham; ORAL PRESENTATION**

One core aspect of large companies' IT infrastructure is system administration. A growing trend in the system administration field is to automate processes as much as possible to save on money and resources. This project focuses on creating servers and automating both their creation and their destruction. Using virtual machines, systems management software, and Razor profiles, any registered device can be maintained and managed and then destroyed and created with a few clicks of the mouse. This project can be used by large businesses who want a solution for their automation desires.

**288. Interviews with NKU Students about their Majors and Interests**  
**DARCI PONCHOT: Honors College, Integrative Studies, Arts and Sciences; FACULTY MENTOR: Belle Zembrod; ORAL PRESENTATION**

The goal is to understand students' interests and how these interests are being developed through the students' college education, especially for those interests that are not part of the students' majors. The motivation is to see what NKU is doing to help or hinder students' explorations of ideas, fields, and potential career paths. Data collection involves qualitative interviews with students from a variety of majors. Data is being collected and coded for themes. Preliminary results will be presented.

**289. The Neighborhoods of Your City: A User Experience Project**  
**MATTHEW JENT: Media Informatics, Integrative Studies, Arts and Sciences; FACULTY MENTOR: Sooyung Cho; POSTER PRESENTATION**

The Neighborhood of Your City (NOYC): A User Experience Project is a tourism app being designed with the user in mind. In this project, user experience research will be conducted, and a prototype constructed and tested.

**301. Android Application for Spring Grove Cemetery and Arboretum**  
**APEKSHYA RIMAL: Center for Applied Informatics, Computer Science MS, Informatics; FACULTY MENTOR: Jill Henry; POSTER PRESENTATION**

The project is an android-based application of the Spring Grove Cemetery & Arboretum, targeted to the people who are interested in touring the cemetery and learning about the structures and landmarks that stand on the Spring Grove ground. The application utilizes Google Maps API to set up the tour and each of the landmarks on the tour are given stop numbers. The visitors are allowed to click on the stop number to open up a window that gives them information regarding when and by whom was the landmark built and what is the significance of the landmark. Geofencing technology is used in the application so that the application can sense when the visitor is around a landmark and then automatically display the details and play the informational audio about that specific landmark.

**302. Sex-Specific Gene Expression Associated with Zinc Homeostasis in Squirrelfish**  
**TAWNI RIKER: Biology, Biological Sciences, Arts and Sciences; FACULTY MENTOR: David Thompson; POSTER PRESENTATIONS**

Studies in squirrelfish (Holocentridae) indicate that females exhibit heightened zinc levels during reproductive periods. The hypothesis of this project is that, in order to accomplish this, female squirrelfish are differentially expressing cellular zinc transporters compared to male squirrelfish. In this study, samples of liver, gonad, and plasma were collected from squirrelfish and analyzed for zinc content. Females did exhibit significantly higher liver and gonad Zn levels than their male counterparts. Additionally RNA was isolated from gill, liver, foregut, and gonad and subjected to RNAseq analysis. This analysis indicated interesting differences in gene expression between the sexes.

# STUDENT PARTICIPANTS

## STUDENT NAME.....PROJECT(S)

### A

|                     |          |
|---------------------|----------|
| Adkins, Hannah      | 242      |
| Adriano, Eric       | 152      |
| Almuzaini, Abdullah | 89       |
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| Ammons, Gage        | 5, 6     |
| Andrews, Amanda     | 63       |
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