

# SPOTLIGHT

# Scholarship

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SHOWCASE OF

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FACULTY RESEARCH & CREATIVE ACTIVITY

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OCTOBER 27, 2022

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October 27, 2022

Greetings!

Welcome to Northern Kentucky University's fourth annual Spotlight on Scholarship! This is a wonderful opportunity for faculty and staff to share their research, scholarship and creative work with each other and the community. This event allows us to recognize, collectively, the importance and value of our contributions to the academy and beyond. We also are given the opportunity to network with our colleagues, which I encourage you to do today.

You will see that the submissions represent all our colleges, and includes work that has been presented regionally, nationally and internationally. Today's presentations feature work by 20 NKU faculty. The work reflects our commitment to the teacher-scholar model and the active engagement of students in the process of our scholarship efforts. The core of our academic life is guided by the pursuit of knowledge in all its forms, and engaged teacher- scholars impact our students, our region, and beyond.

At the end of the presentations, I look forward to recognizing this research with the fourth annual Sol award (pronounced soul). Sol is the Norse goddess of enlightenment; she is the sun; and she is rebirth, wisdom, creation and enlightenment. It is believed that Sol was adapted by the Norse from other pagan religions throughout northern Germany and Scandinavia. It is not surprising that after long northern winters, the coming of light is a sign of spring, new beginnings, rebirth and renewed energy.

In this spirit, the NKU award for outstanding research, creativity and scholarship was named after this Norse deity; she embodies the spirit of a new and better tomorrow. The spirit of creativity and the search for knowledge are a constant force at NKU. Like the sun, they are ever present, ever burning, ever renewing, with inexhaustible energy.

I am committed to supporting your scholarly and creative work, and I extend my congratulations for all your achievements during the past year.

Sincerely,



Matt Cecil  
Provost and Executive Vice President for Academic Affairs



Spotlight on Scholarship developed from the desire to celebrate and shine a light on the amazing work of our faculty and staff. This event gives us the opportunity to come together as a community to share some of the best scholarship our institution has to offer and help tell the story of NKU.

## UNIVERSITY RESEARCH COUNCIL 2022-23

**Rachael Banks**

Visual Arts

**Nicholas Caporusso**

Computer Science

**Linda Dynan**

Economics

**Doug Feldman**

Education

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**Eric Jackson**

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**Shauna Reilly, Chair**

Political Science

**Christian Sheehy**

Library

**Lynne Zajac**

Nursing

The University Research Council and Spotlight on Scholarship is grateful to the NKU Foundation for their support of this year's event.



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NKU Spotlight on Scholarship  
October 27, 2022  
Otto Budig Theater

- 8:45–9:00 Coffee and Networking
- 9:00–9:15 Welcome – President Ashish Vaidya
- 9:15–9:30 Ty Brumback – Associate Professor, Psychological Science  
“Effects of alcohol use on the autonomic nervous system: Implications for sleep, mood, and health”
- 9:30–9:45 Reiko Ozaki – Assistant Professor, School of Social Work  
“Creating a Community Supportive of Refugees and Immigrants in Northern Kentucky: Welcoming Community Project”
- 9:45–10:00 Andrea Brooks – Librarian and Associate Professor, Steely Library  
“Aha! Centering Student Voices to Better Understand Information Literacy Teaching”
- 10:00–10:15 Tamara O’Callaghan – Professor, English  
“Gazemapping, Reading, and Medieval Manuscripts”
- 10:15–10:30 NKU String Project Sinfonietta Class  
Director, Dr. Holly Attar  
Teaching Assistant, Maddie Pittman (Music Education Major, violin)  
Selections will be announced from the stage
- 10:30–10:45 Break
- 10:45–11:00 Brian Hackett – Associate Professor, History  
“The Second Baptist Church Restoration and Interpretation Project, New Richmond, Ohio”
- 11:00–11:15 Lorita Nivanthi Mihindukulasooriya –Assistant Professor, Physics, Geology and Engineering Technology  
“Monitoring the water quality of karst springs in Northern and Northeastern Kentucky”
- 11:15–11:30 Chris Strobel – Professor/Director of NorseMedia, Electronic Media & Broadcasting  
Christopher Lawrence – Associate Professor, Counseling  
“Head Games”
- 11:30–11:45 Allyson Graf – Assistant Professor, Psychological Science  
Joan Adkins – Lecturer, Management  
Katherina Terhune – Associate Professor, School of Social Work  
“Caregiving Across Campus: Using an Age-friendly University Framework to Recognize and Reduce Barriers to Student Success and Employee Performance”
- 11:45–12:00 Monica Wakefield – Associate Professor, Sociology, Anthropology & Philosophy  
“Effects of an invasive food resource on female reproduction in wild olive baboons (*P. anubis*)”

- 12:00–1:00 Lunch – UC 375 (Ballroom)  
Musical performance: John Zappa (trumpet), William Brian Hogg (saxophone), Brandon Coleman (guitar) Jim Connerley (piano)  
Performing selections from the Great American Songbook
- 1:15–1:30 Justin Yates – Professor, Psychological Science  
“Effects of Adolescent Methylphenidate (Ritalin®) Administration on Methamphetamine Relapse During Adulthood in Rats”
- 1:30–1:45 Alyssa Appelman – Associate Professor, School of Media and Communication  
“News Coverage of Public Opinion Polls: Reactions from Journalists and Readers”
- 1:45–2:00 Emily Shifley – Associate Professor, Biology  
“How do genes guide embryonic development?”
- 2:00–2:15 Kristine Yohe – Associate Professor, English  
“Reckoning With the Past: The Historical Poetry of Frank X Walker”
- 2:15–2:30 Break
- 2:30–2:45 Banwari Mittal – Professor, Marketing, Sports Business & Construction Management  
“Happy Campers or Unhappy Prisoners: How Materialism Punishes Us in Lockdown Times”
- 2:45–3:00 Tonya Krouse – Professor, English  
“Reimagining the Humanities in NKU’s Foundation of Knowledge General Education Curriculum: The STAR Program”
- 3:00–3:15 Stacie Jankowski – Associate Professor, School of Media and Communication  
“What Do You Meme?: Audience Meme Construction of Leadership and Political Life”
- 3:15–3:30 Joan Ferrante – Professor, Sociology, Anthropology & Philosophy  
Lynnisia Hillman – Lecturer, Sociology, Anthropology & Philosophy  
“An Overview of The MCRC Project: An Interdisciplinary Collaboration”
- 3:30–3:45 Musical Interlude  
Corbett Trio – Holly Attar, viola; Amy Culligan, cello; and William Herzog, violin  
Lies You Can Believe In (2006) by Missy Mazzoli (b. 1980)
- 3:45–4:00 Presentation of Spotlight on Scholarship “SOL” Award  
Provost, Matt Cecil
- 4:00–4:30 Music, Cocktails and Networking  
Corbett Trio: Holly Attar (viola). Amy Culligan (cello), William Herzog (violin)

**NKU  
RESEARCH  
SCHOLARSHIP  
& CREATIVE ACTIVITY  
ABSTRACTS**

**Alyssa Appelman**

Communication

## **News Coverage of Public Opinion Polls: Reactions from Journalists and Readers**

Journalists often write about polls, but do readers know how to interpret these articles? Do journalists know how to craft them? This project examines news coverage of public opinion polls and explores whether journalists and readers are familiar with best practices in this domain. It was conducted as a two-part study using social-science research methods. Study 1 tested the effects of polling mistakes on readers' perceptions. A total of 495 people read sample news articles with varying levels of mistakes. They only noticed the errors when they were very frequent, and many didn't assess the stories differently based on the errors. There was also no clear evidence that knowledge of polling and numeracy guidelines affected the findings. Study 2 asked journalists to reflect upon this kind of coverage. A total of 51 journalists were asked open-ended questions about their individual strengths and weaknesses, as well as their perceptions of the industry's strengths and weaknesses. They acknowledged that poll and survey coverage often contains errors. Many considered themselves to be better than the industry as a whole, and many identified structural issues that can lead to these errors. In all, these findings suggest the need for additional media literacy training for readers and numeracy training for journalists, along with research to evaluate such programs. These concerns are particularly timely, given the upcoming midterm elections. Concerns about the ways journalists reported on polls in the 2016 and 2020 presidential elections have brought renewed attention to this type of work within the academic journalism community. This project could be of interest to colleagues in political science, statistics, and English, as well as community members interested in politics and news engagement. This project also aligns well with the university's GEARUP with Information Literacy initiative.

**Andrea Brooks**

Steely Library

## **Aha! Centering Student Voices to Better Understand Information Literacy Teaching**

The Framework for Information Literacy for Higher Education (ACRL, 2015) is structured around six concepts, or big ideas, that present passageways to develop information literacy skills, practices, and dispositions. The concepts include ideas like Scholarship is a Conversation, and Searching as Strategic Exploration. At NKU, librarians aim to teach a scaffolded curriculum, from the first-year experience through graduate school, that integrates the Framework's six concepts. Librarians have also aligned the six concepts with the university's Quality Enhancement Plan, GEARUP with Information Literacy. Librarians are sometimes challenged to assess student learning in relation to these six concepts, especially when most librarian instruction takes place in one class meeting. However, learning will emerge from even a short lesson and that new insight can profoundly impact a student. Asking students to share an "aha" moment, or a sudden moment of insight after class tells educators a lot about student learning. "Aha" moments provide student-centered assessment that align well with the fluidity of learning that takes place in most classrooms. This research project describes using "aha" moments as an assessment approach to gain a better understanding of student learning following information literacy instruction. Librarians have collected hundreds of "aha" moments from NKU students that reflect information literacy knowledge and coded responses to one of the six Framework concepts and one of the GEAR outcomes. This presentation will share the results of this work, including examples of student insights, and what it tells us about our information literacy efforts. Collectively, "aha" moments provide educators with insight about which concepts students are grasping and which concepts are not leaving a mark. Additionally, the "aha" moment approach could be useful across disciplines and offers an authentic assessment of student learning.



**Ty Brumback**

Psychological Science

## **Effects of alcohol use on the autonomic nervous system: Implications for sleep, mood, and health**

Alcohol is one of the most widely-used psychoactive substance in the world. It is also the most costly to the US economy, with an estimated \$28 billion in healthcare for alcohol use and \$178 billion in lost productivity annually (CDC, 2019). Understanding the mechanisms that lead to excessive alcohol use is critical to reducing the burden on individuals and society. The autonomic nervous system (ANS) helps regulate affective and stress responses, and may be a viable target for understanding both risk for and consequences from heavy drinking. This study aimed to quantify the relation between ANS function and self-regulation in young adult alcohol drinkers to characterize the dynamic effects of alcohol on the ANS and to identify markers of risk for substance use and potential targets of intervention. We investigated the relationships between heart-rate variability (HRV), a marker of ANS functioning, and self-reported alcohol use, and then examined the potential effects on mood, self-reported craving for alcohol, and sleep. Each variable reflects the interaction between physiological and psychosocial factors that could contribute to excessive drinking. We constructed linear models predicting HRV with past year drinking, mood, and sleep that indicated sleep ( $\beta=1.2$ ,  $p<.001$ ) and drinking ( $\beta=-.02$ ,  $p<.05$ ) affect HRV. Drinking and mood exhibited a significant interaction ( $\beta=-.05$ ,  $p<.05$ ) indicating an interplay between mood and drinking that may exacerbate effects. Additionally, separate models examining craving showed that HRV predicted craving ( $\beta=0.70$ ,  $p=.04$ ), and craving predicted alcohol use ( $\beta=2.89$ ,  $p>.001$ ). Further, group analyses by sex revealed an effect of alcohol use on HRV in males only (Use $\rightarrow$ HRV:  $\beta=.64$ ,  $p=.04$ ; HRV $\rightarrow$ Craving:  $\beta=1.20$ ,  $p=.04$ ). Our study provides evidence that alcohol consumption is associated with dysregulation of ANS, and interacts with self-regulation, sleep, and low mood. Targeting this dysregulation could reduce risk for negative consequences of alcohol use on mood and health in young adults.

**Joan Ferrante**

Sociology, Anthropology & Philosophy

## **An Overview of The MCRC Project: An Interdisciplinary Collaboration**

Today, the United States divides all its peoples into six categories—five racial (e.g., Asian, Black, White, etc.) and one ethnic (Hispanic). It is one thing to invent a handful of categories; it is another thing altogether to divide every individual living in the United States into them. How was that done? And why? When we know the answers it becomes painfully clear that the United States is not a nation of races; rather, it is a nation of people systematically broken apart into unequally valued racial categories. That breaking apart was carried out in the most callous to sorrowful ways. We can call for the dismantling of racial categories, but before that can happen, we must first truly grasp how and why the categories exist. In this presentation we cover how The MCRC Project brings together creative, performing and visual artists to produce engaging films that reveal how, for hundreds of years, the U.S. government (and the 13 English colonies before) broke people into racial categories. We show examples of how The MCRC Project uses the arts to tell historically-grounded stories about how/ways family, friendships and other intimate relationships were broken apart (and still are) to make racial categories work. The ways this was done is something to mourn.

**Allyson Graf**

Psychological Science

## **Caregiving Across Campus: Using an Age-friendly University Framework to Recognize and Reduce Barriers to Student Success and Employee Performance**

Caregiving has steadily increased over the years, with approximately 44 million individuals in the U.S. providing over 37 billion hours of unpaid, informal care for adult family members and friends with chronic illnesses or conditions that impact their functionality and daily activities. The pandemic has amplified caregiving due to healthcare shortages. Caregivers are commonly at risk of foregoing their own physical and mental health needs in service to their care-recipients, putting themselves at greater risk for chronic health conditions, burnout, and role strain. Furthermore, there is an impact on employees in the form of reduced productivity and increased absences, and caregiver burden on students may produce an unacknowledged barrier to access, retention, and completion. While much caregiving research has been completed, research on student caregivers is scant, with less known about the experiences and the needs of students in caregiving roles. Utilizing the Age-Friendly University (AFU) framework, this study aims to: (1) obtain an estimate of the number of caregivers on NKU's campus and how these caregivers break down across campus constituencies (i.e., students, faculty, and staff) and demographic categories (e.g., gender, race/ethnicity, etc.); (2) identify unmet caregiving needs and impact on well-being and role strain to guide future recommendations, support services, and solutions. This study utilized a multimethod design involving a campus-wide survey and focus groups. Preliminary data suggest that caregivers on campus typically balance full-time work and school while providing care an average of 11.88 hours per day. Most caregivers are providing care for parents or in-laws (80%) with assistance from other family members. Student caregivers reported notable impacts from caregiving on study time, ability to focus and plan for the future, and finances. Recommendations for assessing student caregiver needs and ways to generate and enhance caregiver support through the AFU lens and community partnerships will be discussed.

**Brian Hackett**

History & Geography

## **The Second Baptist Church Restoration and Interpretation Project New Richmond, Ohio**

The Second Baptist Church in New Richmond, Ohio was an African American Church built in 1860. It served a vital Black community on the borderlands between slave and free states. The Black community was an important part of New Richmond, very active in the struggle for human rights, serving the Underground Railroad, supporting black education, and hosting an organization what would later become together with others to form the NAACP. The project goal is to research and restore the church to its former appearance, place it on the National Register, and use it for the interpretation of Black History. We also hope to add it to the Network of Freedom Trail administered by the National Park Service. The research, restoration plan, interpretation plan and part of the grant writing will be done by students. The project is a combination of classes: HIS 594, HIS 522 and student independent studies. The first phase of the project was to acquire the property and researching the location of church records and the Union Association of the Colored Men of New Richmond. The second phase is ongoing and includes a full physical investigation of the property including ground penetrating radar, paint analysis and an existing structures report. This work will be captured on video for a documentary on the project for the Department's YouTube channel. The Second Baptist Church project is part of a larger project involving students that includes the Parker Academy, (a first of its kind College Prep-school, open to all races and genders, founded in 1839) the Samaritan Cemetery, (containing the remains of 28 Black Civil War soldiers and sailors, and civil rights activists including Mary Lumpkin), and the family of Robert Duncanson, (renowned 19th Century American Master Artist).

**Stacie Jankowski**

Communication

## **What do you meme?:**

### **Audience meme construction of leadership and political life**

Funny, snarky, silly, dumb — internet memes may fall into all of these categories. They also are important ways of storytelling, political participation, and identity and culture creation. Memes are particularly important in modern political life, as voters and citizenry create and view, legitimate and delegitimate. This presentation discusses the importance of memes as it examines two recent projects about memes and political communication. The first, published in the Kentucky Journal of Communication and coauthored with NKU faculty Dr. Jessica Kratzer, examined how memes framed Kentucky Governor Andy Beshear's leadership during the first week of Covid shutdowns in March 2020. These memes found a leader who was framed through leadership archetypes of a warrior, a politician, and a nurturer. Beshear was also framed as an object of lust. Through the memes we saw the importance and repackaging of official communication and shared culture. The second, published in the Journal of Communication Inquiry and coauthored with external faculty Dr. Jessica Birthisel and Tara Kelley, examined the memetic storytelling created during the limbo period between the 2020 presidential election day and when the race was officially "called" for Democratic candidate Joe Biden. These memes showcased a spontaneous, collaborative, and evolving moment of meme-based storytelling that mirrored the classic five-act storytelling structure. Memers collectively created a storytelling experience as they memed the shared tale of a distinct political moment as moods shifted, plot twists emerged, and unlikely heroes came to the forefront.

**Tonya Krouse**

English

## **Reimagining the Humanities in NKU's Foundation of Knowledge General Education Curriculum: The STAR Program**

The STAR Program is a collaborative, research-based initiative that brings together NKU faculty from across disciplines to energize the humanities and demonstrate their relevance to all undergraduates, including those who do not pursue degrees in the humanities.

In the program's gateway seminar experience for first year students and coherent general education pathway, students will:

- Study transformative texts to discover lives and places outside their own experience.
- Think deeply and critically about their own identities in relation to others, a task enabled by the transformative texts that they study.
- Act responsibly in the communities of which they are a part, using classroom learning to inform non-academic endeavors.
- Reflect on those actions as part of a broader intellectual and social project of humanistic inquiry, which ties the pressing concerns of our current moment to a living past embodied by enduring works of literature, history, and philosophy.

This program conceives a general education for pre-professional students that encourages improved skills in creative problem-solving, intercultural competence, and real-world innovation. Integrating institutional research with pedagogical research connected to equity, curriculum development, student success, and the value of the humanities to a liberal arts education, this project has been awarded a \$25,000 Cornerstone: Learning for Living Planning Grant from the Teagle Foundation and National Endowment for the Humanities for 2022-2023. As a condition of the planning grant, NKU will apply for an implementation grant of up to \$350,000, which would be awarded for 2023 to 2026. Intersecting with Success By Design and Moonshot for Equity initiatives, this project seeks to harness the specialized knowledge of the humanities to introduce students in pre-professional courses of study to concepts, approaches, and skills that are essential for both participatory citizenship and workplace success. The Spotlight presentation will include PowerPoint visuals.

**Lorita Mihindukulasooriya**

Physics, Geology & Engineering Technology

## **Monitoring the water quality of karst springs in Northern and Northeastern Kentucky**

Abundant karst features in and around Kentucky can create pathways to contaminate groundwater, leading to unsuitable drinking water for consumption. The purpose of this project is to monitor the water quality of karst springs throughout northern and central Kentucky and to model environmental and meteorological factors contributing to groundwater quality. Multiple water quality parameters were measured onsite once a month from May to September 2021 at eleven selected sites. Samples were also collected to measure the concentration of heavy metals using ICP in the lab. Big bone Lick (BBL) salt spring was monitored twice a month from June till the end of September. Despite the paleontological significance of BBL; the birthplace of vertebrate paleontology, hydrogeochemical conditions of these salt springs are poorly studied. The Source of the water at these springs is brine from ~ 450 million-year-old Sandstone located ~ 200 m below the present-day land surface. All of the monitored springs recorded elevated levels of nitrate at least once during the monitoring period. Common sources of nitrates to water bodies include human sewage, livestock manure and fertilizers from farmlands. The higher nitrate levels were commonly recorded following storm events suggesting that the aquifers directly recharge from contaminated runoff. Literature suggests that the arrival of contaminants at a spring can vary depending on local geological conditions. Further research is required to determine the source of the contaminants and the contaminant arrival time into springs following a storm event. Such information can be useful when using these springs as a source of drinking water or feeding livestock.

**Banwari Mittal**

Marketing, Sports Business & Construction Management

## **Happy Campers or Unhappy Prisoners: How Materialism Punishes Us in Lockdown Times**

COVID-19 and the resulting prolonged lockdowns created an unprecedented upheaval in our daily lives at large and in our lifestyles as consumers. Could we learn any lessons from our experiences during this historic catastrophe? The purpose of this research was to understand the psychological experience of the lockdowns and the role of individual difference variables in that experience. Using survey data from U.S. consumers, the research identified two opposite but co-existing feelings, making us either happy campers or unhappy prisoners. Our placement in these groups was driven by the degree to which we expected adverse financial impact of the pandemic to continue unabated post-COVID. Even more significant factors were how we chose to spend our time during the lockdown and our pre-COVID enduring state of subjective happiness. In our role as consumers, our life history of immersion in the marketplace—measured here by materialism and love of shopping—made us suffer as unhappy prisoners during the lockdowns. The study's findings suggest important pathways for improving our wellbeing as consumers in the face of future adversities. As we enter the now reopening marketplaces, we should ask, how shall we live our post-COVID lives. The research shows us, how—if we so choose to.



**Tamara O'Callaghan**

English

## **Gazemapping, Reading, and Medieval Manuscripts**

This presentation will focus on my major research project for my Spring 2022 sabbatical: the use of eye-tracking technology to study the reading process with medieval manuscripts through gazemapping (data visualizations that can communicate important aspects of visual behavior). I am exploring to what extent the physical design of the manuscript page directs our reading and reception of the written text. The physical page—that is, the form by which the written text is conveyed – is not incidental to how a text is engaged with and understood. The application of eye-scanning technology and methodology to the reading practices in the Middle Ages forms the foundation of the project. Because digital reading platforms are so new, we are aware that they direct our reading, often in ways quite different from those of the more traditional print book. We are less aware of such direction with printed books because we have learned at an early age how to read them. And because medieval manuscripts appear similar in many ways to the printed book, our expectations for how to read a literary work in medieval manuscript form are much like those for the printed text. However, reading medieval manuscript pages with their visual design, decorations, and illuminations may, in fact, have more in common with reading a webpage than the printed page. Consequently, I am working with a colleague (Dr. Andrea R. Harbin, SUNY Cortland) on using eye-tracking technology to explore how readers view the medieval manuscript page, especially for texts that survive in multiple manuscripts with significantly different layouts.

**Reiko Ozaki**

Social Work

## **Creating a Community Supportive of Refugees and Immigrants in Northern Kentucky: Welcoming Community Project**

Northern Kentucky has experienced a remarkable growth in the immigrant population (40%) compared to its overall population (6%) in recent years. As a new federal refugee resettlement site, the region is likely to see the continuing increase of immigrants. The term immigrant refers to an individual relocating to another country for permanent residence. Refugees are immigrants who fled their native country due to fear of persecution, war, disaster, and other serious disturbance of public order. Over 75,000 Afghans, particularly those who assisted the U.S. military during the war in Afghanistan, evacuated to the U.S. as they faced serious threats when Kabul, the capital, fell to the Taliban in August 2021. Since then, approximately 60 Afghans resettled in Northern Kentucky in 4 months at an unprecedented speed. For the community to thrive, supporting our new neighbors from across the globe and creating a diverse and inclusive culture is crucial regardless of how they arrived. The upward trend of hate crime based on race/ethnicity/ancestry and religion in the U.S. is alarming as it affects the safety and wellbeing of not only immigrants but all community members. Against this backdrop, Welcoming Community Project (WCP) aims to cultivate a culture supportive of refugees/immigrants in Northern Kentucky. WCP was prompted by concerns about negative perceptions of refugees in the region raised in the taskforce consisted of Northern Kentucky social services, educational institutions, and businesses. WCP uses the bystander intervention model, a public health approach that focuses on changing the attitudes and behaviors of community members to create a healthy and safe community. The purpose of this presentation is to describe WCP's community engagement and evidence-based approach in program development. The presentation will encourage discussions and future collaborations on efforts to create a more inclusive Northern Kentucky.

**Emily Shifley**

Biological Sciences

## **How do genes guide embryonic development?**

We start our lives as a single cell, a fertilized egg, which divides many times building up a group of embryonic cells that will eventually form all the organs of our complex bodies. As a developmental biologist, I am interested in understanding how embryonic cells communicate with one another and organize themselves into these organs. If the early embryo does not develop properly, this can lead to birth defects. There are different genetic signaling pathways that help cells communicate and differentiate during embryonic development. NKU student researchers in my lab have focused on one genetic signaling pathway called the Fibroblast Growth Factor (FGF) pathway and its role in guiding the development of a region of the embryo called the pharynx. The pharynx will eventually form structures in the neck including the thymus and parathyroid glands, as well as cartilage and bones of the face. We are interested in this part of the developing embryo because there are a number of birth defects with craniofacial malformations that affect humans, and we do not know the causes of all of these syndromes. For our experiments, we used *Xenopus laevis*, the African clawed frog, as a model organism. *Xenopus* and humans are both vertebrate animals and many of the genes that guide their embryonic development are the same. We blocked the FGF pathway in the developing *Xenopus* pharynx during different embryonic stages and found that the resulting tadpoles often showed changes in their gene expression patterns and craniofacial defects. Our data helps reveal how certain genes are turning on other, downstream target genes and all of these genetic signals together help instruct embryonic cells to form different organs. This basic, developmental biology research contributes to other researchers and clinicians understanding of the potential causes and treatments of certain birth defects.

**Chris Strobel**  
Communication

**Christopher Lawrence**  
Counseling

## **Head Games**

The Centers for Disease Control and Prevention (CDC) describes mental health among children as a substantial public health concern. According to the CDC (2022), “Being mentally healthy in childhood means reaching developmental and emotional milestones, and learning healthy social skills and how to cope and stay resilient when there are problems.” To address such concerns, Electronic Media and Broadcasting Professor Chris Strobel and EMB students have worked with Dr. Christopher Lawrence from the Counseling and Human Services & Addictions Program to create Head Games, a series of videos to teach young children about social and emotional strategies for well-being. Pulling heavily from theories at the forefront of adolescent social science, each episode runs approximately 15 minutes. The multicamera production features Dr. Lawrence as the “Doc”, a human scholar who helps his two puppet friends, Shelly (a hyperkinetic sea monster) and Bellum (an anthropomorphic brain) navigate the complexities and nuances of understanding how and why we all do the things that we do. Animation and illustrative graphics allow each topic to be explored in a way that is engaging and approachable for the young audience. This project reaches across campus (support has been provided by students, faculty, and graduates from Theatre, Music, and Media Informatics) allowing each discipline to contribute to the project’s success. Dr. Lawrence collaborates with colleagues from the Counseling and Human Services on the episodes’ concepts, which are then refined by Professor Strobel and the EMB students before the rehearsal and production process takes place in the College of Informatics. Head Games will be made available online with additional teaching materials available for grade school classroom use, reinforcing NKU’s commitment to the well-being and education of our community.

### References

Centers for Disease Control and Prevention. (2022, May 18). Children’s mental health: Understanding an ongoing public health concern. <https://www.cdc.gov/childrensmentalhealth/features/understanding-public-health-concern.html>

**Monica Wakefield**

Sociology, Anthropology & Philosophy

## **Effects of an invasive food resource on female reproduction in wild olive baboons (*P. anubis*)**

Female reproduction in mammals is energetically costly and heavily influenced by female energy balance (net sum of calories in versus calories out). When food availability is high this results in a positive energy balance – surplus energy that can be invested into reproduction; whereas when food availability is low or of low quality, available energy will be invested in growth (immature individuals) and/or maintenance (health and survivorship). Therefore, higher food availability is expected to result in earlier onset of reproductive viability (i.e. younger age at menarche - the onset of menstruation, and birth of first offspring) and faster reproductive rates (i.e. shorter interbirth intervals (IBI) – time between subsequent births). We utilized long-term data from the Uaso Ngiri Baboon Project (UNBP) between 2002 – 2021 to analyze the effects of a novel food, the highly invasive prickly pear cactus *Opuntia stricta*, on the reproductive parameters of female olive baboons (*Papio anubis*). *Opuntia* invaded the baboons home range beginning in 2005 and slowly became an integral part of their diet. The year-round availability of this calorie-rich food improved female body condition, leading to faster growth and reproduction. Between 2008 and 2021 there was a significant decline in age at menarche and age at first-birth. IBI showed a more complex relationship initially increasing before decreasing slightly but not significantly, likely due to the mixed effects of nutritional and social factors. The spread of *Opuntia* has provided a natural experiment demonstrating the link between food availability, female growth, and reproduction in olive baboons. Baboons are a close human relative, and like humans are highly adaptable and behaviorally flexible. This research contributes to our understanding of evolutionary reproductive health in humans. Moreover, it is vital to document the effects that human-induced ecological changes have on wildlife as we seek ways to mitigate these impacts.

**Justin Yates**

Psychological Science

## **Effects of Adolescent Methylphenidate (Ritalin®) Administration on Methamphetamine Relapse During Adulthood in Rats**

Methylphenidate (Ritalin®) is commonly prescribed to treat attention-deficit/hyperactivity disorder (ADHD) in children and adolescents. Considering methylphenidate is a psychostimulant with a chemical structure similar to cocaine, there are concerns about its misuse potential, and there are concerns that long-term methylphenidate treatment can increase addiction-like behaviors to other psychostimulant drugs such as cocaine or methamphetamine. In the current experiment, we tested the hypothesis that early-life methylphenidate exposure would increase methamphetamine relapse-like behavior. We first administered either methylphenidate (1.5 mg/kg) or apple juice (control group) to Spontaneously Hypertensive Rats (SHRs), an animal model of ADHD, during adolescence and early adulthood. We then tested SHRs for their preference for methamphetamine (1.0 mg/kg) using the conditioned place preference (CPP) paradigm. During CPP, rats learned to associate one environmental context with methamphetamine and a different environmental context with saline (i.e., salt water). The contexts differed in color (black vs. white) and in flooring (wire mesh vs. steel rod). After eight days of conditioning, rats were given a preference test in which they could freely explore each environmental context. Spending more time in the methamphetamine-paired compartment reflected enhanced CPP (i.e., preference for methamphetamine). Following the preference test, rats were given extinction training, in which they were allowed to explore each compartment. During extinction, rats never received methamphetamine. This is analogous to someone that is attempting to abstain from drug use. Once the time spent in the methamphetamine-paired compartment decreased by at least 20%, rats were given a reinstatement test, a model of relapse. Rats were injected with a low dose of methamphetamine (0.25 mg/kg) before being placed into the CPP chamber. Our hypothesis was not supported as early-life administration of methylphenidate failed to increase reinstatement of methamphetamine seeking in SHRs. These results suggest that long-term treatment of methylphenidate does not increase relapse vulnerability later in life.

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## **Reckoning With the Past: The Historical Poetry of Frank X Walker**

My project, "Reckoning with the Past: The Historical Poetry of Frank X Walker" guides readers to discover how Walker's five persona poetry collections promote racial healing through reexamining prior injustice, connecting the past to today, and striving towards an antiracist future. This work focuses on the ways Walker imagines the motivations of real people—namely York, the enslaved Black man who accompanied Lewis and Clark on their 1804-1806 westward exploration; Isaac Murphy, the early Black jockey who repeatedly won the Kentucky Derby in the 1890s; and Medgar Evers, the civil rights leader assassinated by a white supremacist in 1963. As the former Poet Laureate of Kentucky and co-founder of the influential Affrilachian Poets collective, Frank X Walker is the author of twelve books of poetry, five of which are historical/ persona poetry, which read much like historical novels. I argue that Walker's historical books support his stated goal: to revisit the past in order to correct omissions, to give voice to the silenced, and to strive towards what he describes as "the healing and reconciliation still needed in America." Primary objectives of my project, therefore, include encouraging readers to reckon with the past by correcting oversights in history, struggling with painful truths, trying to understand the humanity on all sides, and aiming towards essential societal healing. My proposed presentation is to share a combination overview and subset of my larger work. First, I will explain my insights about Walker's historical project—where five of his books address York, Isaac Murphy, or Medgar Evers—by presenting my overall understanding of these men in history and how Walker imagines them in literature. Then, I will share specific examples of Walker's poems about York to help others to understand my interpretations, to better appreciate hidden history, and to arrive at their own responses.



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