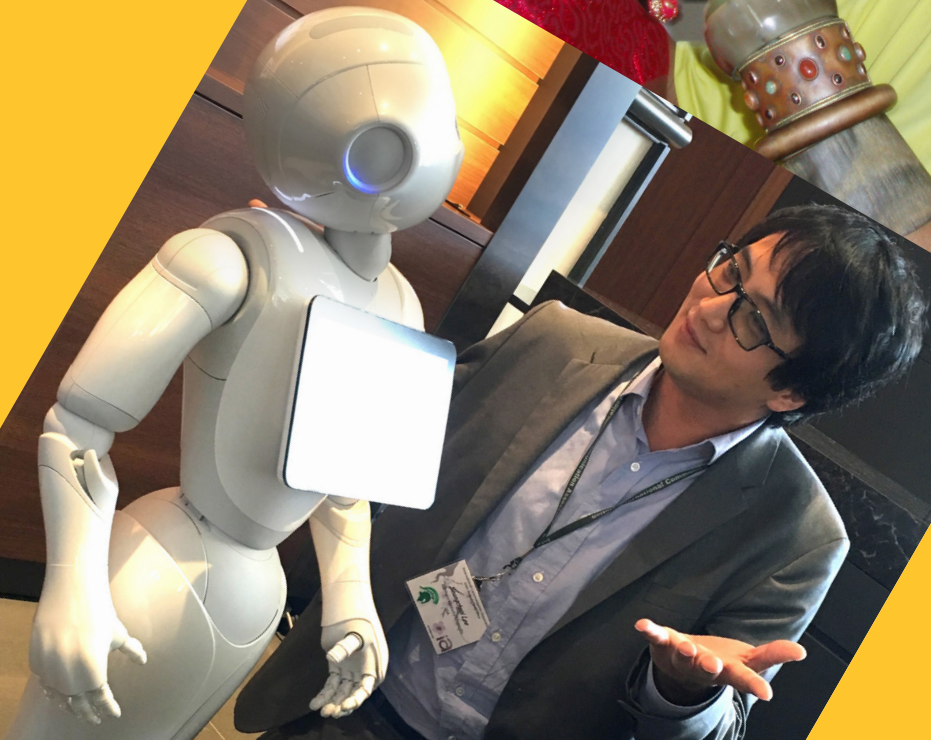


2015 - 16 FACULTY DEVELOPMENT PROGRAMS



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INTRODUCTION

This electronic publication summarizes the activities and work of Northern Kentucky University faculty members who were supported by the University's faculty development programs during the academic year of 2015-16 and the summer of 2016. Three faculty development programs are currently in place at NKU: sabbatical leaves, summer fellowships, and faculty project grants.

SABBATICAL LEAVES are granted by the University to promote the professional growth and effectiveness of the faculty. Sabbatical leaves are granted to enable recipients, based on merit, to devote additional time to scholarly activity and research, advanced study, or artistic performance—all in pursuit of academic objectives. Tenured, full-time faculty, and department chairs are eligible to apply for sabbatical leave. In 2015-16, 23 faculty members participated in the sabbatical leave program.

SUMMER FELLOWSHIPS provide funds to support professional development during the summer months. Examples of types of activities that may be applicable include: improving teaching skills; research; scholarly writing; creative or artistic projects; preliminary studies and literature searches; and attending seminars or courses related to one's field or professional work. Full-time tenure-track or tenured faculty may apply for a faculty summer fellowship. Each of the 13 faculty members awarded a fellowship for summer 2016 received an award of \$6,000.

PROJECT GRANTS provide funds to pay expenses, purchase equipment, and to cover other financial needs for sabbatical leaves, faculty summer fellowships, and for other instructional, scholarly, and creative activities where financial support is not available through department budgets. Full-time tenure-track or tenured faculty may apply for a faculty project grant not to exceed \$6,000. In 2015-16, 13 faculty members completed project grants.

The faculty development programs offer an opportunity for faculty members to grow professionally, to keep abreast of developments in their disciplines, and to infuse these experiences into the classroom to enhance student learning. As illustrated in this electronic publication, Northern's faculty development programs have enabled our faculty members to undertake important work and to accomplish great things!

FACULTY DEVELOPMENT PROGRAMS AT NORTHERN KENTUCKY UNIVERSITY

This electronic publication was prepared by Northern Kentucky University with state funds (KRS 57.375). It is Northern Kentucky University's policy to ensure equal employment opportunity for all persons and to take the necessary actions needed to recruit, employ, train, promote, and retain qualified faculty and staff, including members of protected groups. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender, national origin, race, religion, sexual orientation, genetic, or veteran status, is prohibited. MC160489

SABBATICAL LEAVE 2015-16



SEYED ALLAMEH
Department of Physics, Geology,
and Engineering Technology

RELIABILITY OF SMALL STRUCTURES WITH POTENTIAL APPLICATIONS IN MICRO ELECTRO MECHANICAL SYSTEMS

The main goals of my sabbatical leave included studies on the reliabilities of small structures and dissemination of the resulting knowledge through conference presentations and refereed publications. The importance of the project is due to the critical dependence of modern automation on small systems. Within the last three decades, automation has matured enough to navigate cars, trains, and airplanes, conduct surgery on patients, and control weaponry among many others. The reliability of mechanical components used in Micro Electro Mechanical Systems (MEMS) devices is vital. These are used as sensors and actuators in aerospace, automobiles, and biomedical equipment. Failure of metallic and ceramic moving parts in microdevices can be catastrophic, especially in life-sustaining applications. During my sabbatical leave, I overhauled a microtesting system that I had developed over the previous years. An undergraduate student worked alongside me on the project. The work also included the development of new software applications to conduct mechanical testing. Novel materials, such as aluminum foam, and covetic aluminum were selected and small specimens, typical of MEMS, were fabricated by EDM and CNC machining. Microtensile tests were carried out to characterize the mechanical behavior of such structures. The preliminary results of this work were presented in the annual conference of the American Society for Mechanical Engineers (ASME) in Houston, Texas. Work on the project has continued in spring 2016 semester, with a second student joining the project. Other synergistic activities included presentation of a second paper at ASME in Houston, and submission of a peer-reviewed book chapter on a related field (micromechanical testing of MEMS) which is in press

SUMMER FELLOWSHIP 2016



ALYSSA APPELMAN
Department of Communication

WORD-SHORTENING AND READER COGNITION: ACRONYM IDENTIFICATION BY ONLINE NEWS CONSUMERS

What abbreviations are news organizations using in print and online? What are the theoretical and practical implications of readers misunderstanding these abbreviations? With my 2016 NKU faculty summer fellowship, I conducted a two-part study to assess the effects of acronyms in news content on reader perceptions. I started with a content analysis of Cincinnati Enquirer headlines from 2015. I found 150 unique acronyms in these headlines, and 27 of these acronyms were found in at least three issues of the newspaper. I then took those popular acronyms, and I conducted a survey to find out whether Cincinnati-area residents (N=209) could identify them, either directly or indirectly. For example, NKU was one of the most commonly used acronyms in the headline sample. Participants were asked to indicate what they thought the letters stood for (i.e., Northern Kentucky University) and to write a general description of what they thought the acronym meant (i.e., a local public university). They also were asked multiple-choice questions about their media use and their perceptions of media credibility, as well as three open-ended questions about what they think when they come across unfamiliar acronyms in the media. This spring, I will code the acronym-identification and acronym-description data, create scales for the survey data, and analyze the open-ended responses. This project fits into my greater body of research, which looks at the effects of news content and style on readers' judgments. Previous projects have looked at the effects of errors, both grammatical and factual, on readers' knowledge and their perceptions of media credibility and quality.

NEW KID ON THE BLOCK: THE ECOLOGY OF CALLERY PEAR, AN EMERGING WOODY INVADER

Callery pear (also known as Bradford pear) is a popular ornamental tree in the U.S. that is native to China and has recently become invasive in our area. Little is known about its ecology. For this project grant, I developed allometric equations that will allow researchers to estimate biomass of each pear tree's components with a simple measurement of stem diameter. Although I had some difficulties with infections in my seed germination trials, I have been able to determine that seeds germinate best with at least three weeks of cool (~4°C) temperatures in the winter.

As our area has these conditions, pear will not be limited by seed germination. Photosynthesis response to light is similar to that of another woody invasive plant, Amur honeysuckle, while it falls below that of the native red cedar. There is a slight decline in photosynthetic rates over the growing season. A leaf litter decomposition experiment showed that pear leaves decompose at a rate between the fastest-decomposing and slowest-decomposing native tree leaves of red maple and sycamore, respectively, although they are much closer to red maple. However, the rate of nitrogen losses from litter are similar to those of Amur honeysuckle, which is known to alter nutrient dynamics of native ecosystems, and so pear has the potential to cause similar adverse effects. Undergraduate students have been involved in all aspects of this project, and some of my dissemination goals have already been met.

PROJECT GRANT 2014-16



RICHARD L. BOYCE
Department of
Biological Sciences

KNOWLEDGE DISCOVERY AND PRIVACY PROTECTION IN ONLINE SOCIAL NETWORKS

With the advent of Facebook, LinkedIn, Twitter, etc., social networks have grown to a new dimension—the online social network—allowing huge numbers of people to participate. Many analysis methods developed in the infancy of the social network analysis discipline did not envision such a data explosion. Thus, developing fast and accurate solutions for large social networks is becoming more essential. I continued my research project on community preservation through social network anonymization (mainly as part of my sabbatical leave during the 2014-2015 academic year) and also approached the problem of minimum dominating sets in social networks, which was the main focus of this project grant. One of my collaborators on the dominating sets research problem was an NKU undergraduate student Matthew Beckerich, whose work was mainly funded from the project grant. We co-authored three conference papers on this topic, and Matthew presented a poster at the Celebration of Student Research and Creativity in April 2015. The project grant also supported my travel during the 2014-2015 academic year to Babeş-Bolyai University in Cluj-Napoca, Romania, which has a student and faculty exchange agreement with NKU. I tried to recruit Romanian students to come to NKU and also initiated research work with two BBU faculty members. I also advised a computer science NKU student who spent a study abroad semester at BBU in spring 2016.

PROJECT GRANT 2014-16



ALINA CAMPAN
Department of
Computer Science

SUMMER FELLOWSHIP 2016



JOHN CARMEN
Department of
Biological Sciences

DEVELOPMENT OF A NOVEL INSECT MODEL SYSTEM OF AMOEBIC PATHOGENESIS

The study of microbial pathogenesis, the development of a disease, requires the use of an *in vivo* infection model, often mice, to confirm and characterize virulence factors and elucidate host-microbe interactions linked to disease. Due to a variety of factors including cost, ease of use, and regulation, researchers have developed an alternative pathogenesis model system using the larvae of the greater wax moth, *Galleria mellonella*. The goal of this project was to test this model system with the protozoan parasites *Entamoeba invadens* and *Acanthamoeba castellanii*. To ensure that larval infection could be performed successfully, control experiments with *Candida* species were performed. Larvae injected with *Candida* spp. died more quickly than larvae injected with a buffer alone. These results confirm that the infection procedure can be performed successfully in my lab. Once this success had been established, larvae were infected with *A. castellanii* or *E. invadens*. Originally, we expected *E. invadens*, a reptile pathogen, to increase the death rate in injected larvae and *A. castellanii*, a ubiquitous amoeba responsible for infections in immunocompromised humans, to have little or no effect. Contrary to our predictions, *E. invadens* fails to increase larval death significantly under the initial conditions used while *A. castellanii* injection results in increased mortality. Future experiments will include increasing the number of *E. invadens* cells used to infect the larvae as well as infecting larvae with the human pathogen *Entamoeba histolytica*. The *Galleria*-infection model will also be used to test novel antimicrobial compounds developed or isolated in the lab.

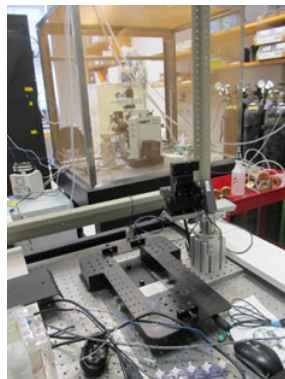
SABBATICAL LEAVE 2015-16



CHRISTINE PERDAN CURRAN
Department of
Biological Sciences

INCORPORATION OF RNASEQ TECHNOLOGY INTO STUDIES OF GENE-ENVIRONMENT INTERACTIONS

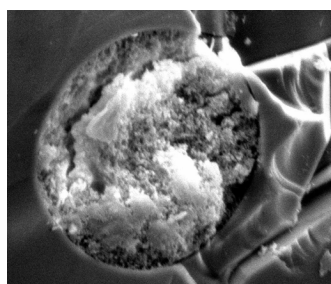
As originally proposed, my sabbatical leave was dedicated to two primary activities: to upgrade skills in genetics and genomics research, and to learn how to use induced pluripotent stem cells in neurotoxicology research. My research focuses on gene-environment interactions and genetic susceptibility to widespread pollutants, so this was an excellent opportunity to learn new skills and techniques that didn't exist when I was a graduate student. I spent the first portion of my sabbatical at the University of Kentucky Advanced Genetic Technologies Center learning Next-Generation DNA and RNA sequencing and data analysis. I was also able to consult with collaborators in the Department of Statistics who are affiliated with the Kentucky Biomedical Research Infrastructure Institute on future study designs. I was fortunate to receive a 2016 faculty development project grant to begin a pilot project based on what I learned at UK.



The second half of my sabbatical was spent at Vanderbilt University Medical Center, where I conducted research in the laboratory of Dr. Aaron Bowman, a well-known neurotoxicologist and expert, in the production and use of adult stem cells for neuroscience research. We began a pilot project to determine if these cells can be used for developmental neurotoxicology studies. This is important, because my current work is limited to a mouse model. Being able to use human cells is likely to provide more detailed and relevant information about early brain development and allow us to reduce the number of animals used in our experiments.

PREPARATION AND ANALYSIS OF POROUS POLYMER MONOLITHS DERIVED FROM METHACRYLATES FOR ENVIRONMENTAL USES

This summer fellowship allowed investigation of porous polymer monoliths (PPMs), mass transport, and dynamics of a model analyte set and Capillary Electrophoresis/ Capillary Electrochromatography method development. Understanding these fundamental properties are important when designing and engineering materials that could aid or support in reclaiming the earth. The results of this investigation could reveal information about how to best engineer materials that interface with common pollutants to the best of current scientific knowledge. The goal that was set forth was to characterize a set of methacrylate-based PPMs in efforts to understand the fundamental mechanisms that underlie the behavior and interactions of the PPMs with chemical compounds that are recognized as common pollutants. Fundamental studies were performed that serve as a foundation for the analysis of how these compounds behave and interact with the solutions transporting them through the PPMs. Also, characterization of PPMs was performed, via Scanning Electron Microscopy.



Lastly, efforts toward method development of an additional method of these analyses were made. The summer fellowship was focused mostly on laboratory based research, but has produced an oral and poster presentation. The dissemination of results documented the synthesis, characterization, and investigation of the PPMs; the results of the fundamental experiments; and the fabrication of the advanced technique.

SUMMER FELLOWSHIP 2016



CHARLISA DANIELS
Department of Chemistry

INTERNATIONAL OUTREACH, JAZZ, AND THE ASSIGNED VALUE OF ONLINE COMMUNICATION

My sabbatical leave, which took place entirely in The Netherlands during the spring 2016 semester, occurred with the help of faculty from one of our partner institutions, Rotterdam University of Applied Sciences. A research project, planned with Rotterdam faculty, regarding the assigned value of online communication was the primary purpose of the sabbatical leave. While working with Rotterdam faculty, the opportunity for a second project regarding community outreach efforts common to the NKU-Rotterdam partnership emerged, and a presentation proposal was submitted and accepted by The Engagement Scholarship Consortium for the 2016 conference.

The sabbatical also supported my continuing participation in the International Week conferences hosted by Rotterdam and Artevelde University College in Ghent, Belgium. In addition, I represented NKU at formal partnership meetings with administration and faculty from Rotterdam, Artevelde University College, and The Hague University of Applied Sciences in The Netherlands at the request of The Center for Global Engagement and International Affairs at NKU.

Faculty at Rotterdam invited me to provide counsel, from the perspective of visiting faculty from the U.S., relating to ongoing communication programs and international study. One semester-long project involved establishing context for a product line from Japan slotted for introduction in the U.S. My presence in The Netherlands also permitted me to counsel several Dutch students interested in attending NKU or completing public relations internships with U.S. organizations. To complement my Music and Entertainment Publicity course (PRE 350), I worked with several Dutch jazz musicians to better acquaint myself with music promotion in the European settings.

SABBATICAL LEAVE 2015-16



GREGORY G. DE BLASIO
Department of Communication

PROJECT
GRANT 2015-16



NATHAN DE LEE
Department of Physics, Geology,
and Engineering Technology

**KELT AND THE NKU OBSERVATORY:
SMALL TELESCOPES WORKING TOGETHER TO MAP THE DISK AND
INNER HALO OF THE MILKY WAY USING VARIABLE STARS**

The purpose of this funding request was to help buy a charged-coupled device (CCD) camera, filter wheel, and astronomical filter system for the NKU observatory 14-inch telescope. The funds were used to buy an SBIG STT-3200ME CCD with an automatic filter wheel and a set of UBVRI Johnson-Cousins filters. During commissioning of the camera system, we discovered that the 14-inch telescope had a defective mount, so the camera was transferred to the 11-inch telescope. This system was used to do a pilot follow-up program where we took three filter photometric observations of two well studied RR Lyrae stars from the KELT RR Lyrae project: AV Peg and SW Dra. The ultimate purpose of this follow-up is to classify and characterize the variable stars from the KELT RR Lyrae project. We had two specific science goals: 1) correct distances to RR Lyrae stars by removing the reddening effects of interstellar dust; and 2) help separate out RR Lyrae stars from other types of variable stars by looking at the color of the candidate stars. In order to meet these scientific goals, we need photometry good to a few percent. By comparing our photometry with data taken from the Michigan State University



NKU research students collect data.

24-inch telescope, we demonstrated that we could achieve between 1 percent and 4 percent photometric accuracy. This work, which involved five undergraduate researchers, resulted in four posters presented at the Heather Bullen Summer Research Celebration and two posters at the American Astronomical Society annual meeting.

THE EFFECT OF FOCUS OF ATTENTION ON REDUCING RISKY LANDING MECHANICS DURING A JUMP-LANDING TASK

Anterior cruciate ligament (ACL) injuries are common among females. Risky landing mechanics have been linked to increased risk of ACL injury. Interventions including feedback have demonstrated success in modifying risky landing mechanics. Internally focused feedback (IF) directs attention to one's mechanics while completing a task, while externally focused feedback (EF) directs attention toward the outcome of the movement.

Purpose: To determine which mode of feedback, IF or EF, is more effective at increasing knee flexion and decreasing vertical ground reaction force (vGRF) during jump-landing.

Design: Biomechanical investigation. **Participants:** Eight participants. Interventions: Participants performed 3 sets of 6 jump-landing off a 30 cm box and stuck the landing. The IF group was told to land softly and with increased bending in the knees. The EF group saw a vector on the screen in front of them and were instructed to try and reduce the size of the vector during landing. **Main Outcome Measures:** Participants performed a rebound jump-landing task from a 30 cm box placed 50% of their height away from the target force platform and upon landing, rebounded for maximum height.

Results: There were no significant differences between groups in vGRF ($F_{1,6}=1.13, P=.328$) or knee flexion angle ($F_{1,6}=3.69, P=.103$). A significant time main effect for vGRF ($F_{1,6}=13.38, P=.011$) was observed, both groups demonstrated decreased forces following both interventions. **Conclusions:** Results of this investigation indicated both feedback groups were able to decrease forces following the interventions. There were no significant differences between groups in vGRF or knee flexion angle. This was a one-time intervention, participants may need to be exposed to the intervention more frequently in order to see a change in vGRF and knee flexion upon landing.

PROJECT GRANT 2015-16



HAYLEY ERICKSEN
Department of
Kinesiology and Health

THE EFFECTS OF NATURAL ENVIRONMENTS ON ATTENTION, MOOD, AND BEHAVIOR

The purpose of this sabbatical was to advance my research and expand my teaching in the area of environmental psychology. Environmental Psychology is the study of how people perceive and respond to the physical environment. Environmental psychologists investigate attitudes and values regarding the environment, how specific environments (e.g., cities, schools, workplaces) affect human well-being, and how a sustainable relationship between humans and nature may be developed.

With psychological science colleague Kimberly Breitenbecher, I investigated how exposure to natural environments affects attention, mood, and behavior. During my sabbatical, we wrote a manuscript describing an experiment we conducted with the assistance of several undergraduates, which was submitted to a peer-reviewed journal for publication. We also read extensively about an outcome not commonly explored in environmental psychology: pain perception. We developed a series of studies that will examine how nature exposure affects mood and the perception of pain. We anticipate involving multiple students in this line of research.

I also expanded my teaching repertoire by preparing to teach social psychology. Social and environmental psychology overlap in explaining, for example, how environmental attitudes affect recycling behavior, whether messages designed to encourage hotel guests to reuse towels are persuasive, and how group behavior can bring about societal change.

SABBATICAL LEAVE 2015-16



KATHLEEN FUEGEN
Department of
Psychological Science

PROJECT
GRANT 2015-16



ANDREA GAZZANIGA
Department of English

ARCHIVAL RESEARCH IN LONDON AND OXFORD, ENGLAND, ON THE PERSONAL PAPERS OF VICTORIAN POETS AND LOVERS KATHERINE BRADLEY AND EDITH COOPER ("MICHAEL FIELD")

Edith Cooper and Katherine Bradley spent 30 years as a "wedded" couple, writing and publishing verse-dramas and poetry together under the single pseudonym "Michael Field" at the end of the 19th century and into the 20th century. As poets and lovers, they maintained a highly colorful and eccentric social and private life. They recorded the rich tales of their private and public life in a joint journal they maintained for 16 years called *Works and Days*. They were also prolific letter writers and corresponded with some of the most celebrated figures of the late 19th century. Despite the scholarly community's agreement that Cooper and Bradley's life-writings are significant artifacts that must be studied in order to expand our knowledge about their poetic works and about issues relating to women writers and homosexuality in late-Victorian England, the bulk of their letters and diaries remain unpublished. With the support of an NKU project grant, I was able to travel to The British Library and The Bodleian Library in England to conduct research on the Michael Field manuscripts to further my scholarship projects. These archived papers contain intimate details about Cooper and Bradley's same-sex romance, friendships with notable figures of the day, and their uniquely collaborative writing process. My ability to transcribe this rich source material enabled me to complete my scholarly article, "Michael Field's Wild Honey From Various Thyme and the Sonnet Tradition," and submit it for publication consideration at the peer-reviewed journals *English Literature in Transition, 1880-1920* and *Tulsa Studies in Women's Literature*. My archival research, supported by NKU's project grant, laid the foundations for my current monograph project, provisionally titled, "Michael Field's Queer Sublime: The Psychology of Transcendence at the Fin-de-Siècle." Moreover, since receiving this project grant, a renowned Michael Field scholar has invited me to be one of the lead transcribers of the archived diaries for a new digital database set to launch in January 2018.

PROJECT
GRANT 2015-16
SABBATICAL
LEAVE 2015-16



JAESOOK GILBERT
Department of
Teacher Education

bornlearning® ACADEMY STUDY

The bornlearning® Academy is a family engagement program that takes place in a school building within the families' school district. It is a six workshop series that utilizes free United Way Worldwide bornlearning.org™ materials, which emphasizes turning everyday moments into learning opportunities.

During Fall 2015, I visited nine bornlearning® Academies in Campbell, Cumberland, Fayette, Henderson, Jefferson, Kenton, Logan and Perry counties in the state of Kentucky. The purpose of these visits was to learn from the bornlearning® Academy school personnel and families their perspectives on bornlearning® Academies. My research questions were:

1. How has participating in the bornlearning® Academy impacted the culture of the home or the family dynamics, specifically parent-child interactions?
2. How effective has the supports received by the bornlearning® Academy facilitators and coordinators been?

The outcome of my research visits was positive. All, the school staff and families, enjoyed the bornlearning® Academy and saw much value in the program. Parents/caregivers are definitely incorporating what they learned at bornlearning® Academy in their homes and in their interactions with their children. Families (i.e., the children

and adults) feel very comfortable in the school building where bornlearning® Academy is implemented as well as with the school staff. The school staff (i.e., the bornlearning® Academy facilitators and coordinators) felt the supports received for the implementation of bornlearning® Academy were sufficient although many expressed continual challenge with recruitment and retention of families for each, in-between, and throughout the six workshop sessions. In conclusion, bornlearning® Academy facilitated positive parent-child interactions and facilitated transition to kindergarten for children and adults.

BEYOND THE IVORY TOWER: DEVELOPING EXPERTISE TO ADDRESS THE REGION'S HEROIN EPIDEMIC

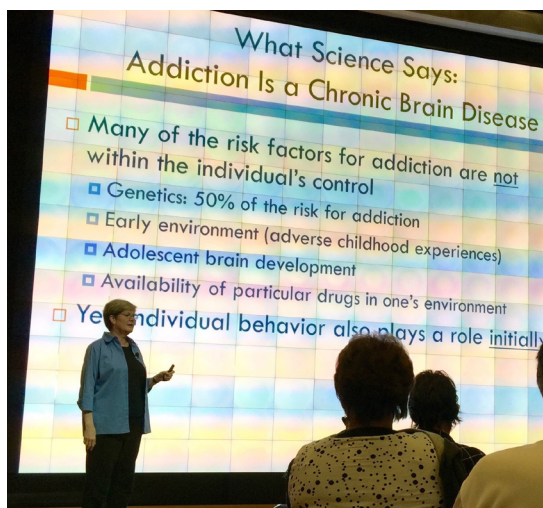
The primary goal of my sabbatical leave in Fall 2015 was to work with local community organizations to address the region's heroin epidemic. The sabbatical provided me with many opportunities to pursue my goal that would not have been possible otherwise. Examples of what I accomplished:

Researching attitudes toward heroin-related harm reduction. In 2015, Kentucky legislators passed a groundbreaking heroin bill. However, many of its harm reduction provisions, such as syringe access exchange programs and medication-assisted treatment, continue to face stiff opposition. Watching members of local grassroots organizations attempt to persuade legislators to pass and implement the bill led to my research focus on identifying factors associated with opposition to heroin-related harm reduction.

My students and I have conducted four studies on the topic, resulting so far in one refereed publication, one paper accepted for presentation at the world's top drug policy research conference, and three Celebration posters.

Working to educate the public about the science of opioid addiction. I gave four different presentations about opioid addiction in various community forums during Fall 2015, and I worked with people from across the university to organize Sam Quinones' campus visits in Spring 2016.

Building ties with community organizations addressing the heroin epidemic. I collaborated with members of NKY PAR to identify barriers to recovery among people pursuing abstinence-focused treatment. The outcome of the collaboration



were so successful that NKY PAR is organizing an all-day Recovery Summit around them in April 2016.

Exploring possible grant funding to advance my collaborative efforts. I joined a transdisciplinary group headed by Gary Ozanich to submit an Emerging Area concept paper addressing opioid use disorder and neonatal abstinence syndrome. A full proposal was invited and will be submitted by April 1, 2016.

SABBATICAL LEAVE 2015-16



PERILOU GODDARD
Department of
Psychological Science

SABBATICAL LEAVE 2015-16

SUMMER FELLOWSHIP 2016



STEVEN J. GORES
Department of English

WILLIAM T.H. HOWE: CINCINNATI BOOK PUBLISHER, LITERARY PATRON, AND RARE BOOK COLLECTOR

This biographical project was designed to recover information regarding the life of William T. H. Howe, the greatest Cincinnati book collector and literary patron during the first half of the 20th century. Though he lived here for the final 30 years of his life and was for eight years head of Cincinnati's American Book Company—the largest textbook publisher in the world—today he is almost entirely forgotten. Because I was unsure how much extant material I would find on Mr. Howe, my original goal was to write several article-length manuscripts focusing on his relationship with the Louisville poet Madison Cawein and his patronage of the Irish poet James Stephens. In the course of my sabbatical, this plan changed. Through the Public Library of Cincinnati and Hamilton County, I discovered a wealth of information about Howe, his family origins, and his literary friends. This information derived partly from newspaper accounts of his rare book purchases and reporting on the famous authors who he escorted on Cincinnati visits, and partly from personal and professional documents held in the library's Joseph S. Stern, Jr., Cincinnati Room. Among other facts, I learned that Howe owned a stately home in southern Campbell County, where he hosted many literary guests, including at least one meeting of the University of Kentucky "Bookthieves" club. More than I had originally thought, this turned into a local history project for which I consulted records of the Literary Club and the Mercantile Library, among others. Along the way, I discovered additional evidence of Howe's many friendships with poets and novelists of his time, including the Nobel-prize-winning author John Galsworthy. During my summer fellowship, I visited the Syracuse University library, repository of the American Book Company's financial records, in order to investigate Howe's profile as a man of business. In addition to being able to review Howe's corporate correspondence, I also garnered valuable information about ABC and Howe's role there from a 550-page, unpublished, typescript company history written by one of Howe's employees. In July, I attended a two-week National Endowment for the Humanities (NEH) seminar, which opened my eyes to the tradition and labor that informs the construction of handmade books and scrapbooks. Howe made such books to give as Christmas gifts and to memorialize his friend Madison Cawein. In early August, I spent a week at the New York Public Library's Berg Collection, where I found a mass of correspondence between Howe and various writers whom he befriended, including not only James Stephens and John Galsworthy, but also the Irish journalist George Russell, aka AE, and the Robin-Hood-reviver Paul Creswick. I am now in the midst of writing a monograph on Howe that stands at over 150 pages. This manuscript will be greatly enlarged by incorporating the new material—all of it previously unpublished and unrecognized—that I have studied and recovered during the time of my fellowship. When completed, I will market it to publishers as an historical biography with connections to both business and literature.

SABBATICAL LEAVE 2015-16



LOIS HAMILL
Special Collections and
University Archives

GRADUATE LEVEL TEXTBOOK ON ARCHIVAL ARRANGEMENT AND DESCRIPTION

I currently have a contract to write a book on archival arrangement and description for analog and digital materials. Archivists physically *arrange* analog records, that is organize them intellectually according to the principles of *provenance* and *original order*.¹ Typically, *description* records the arrangement in a narrative finding aid describing the information content of the records. Although sharing much in common, digital files must be managed sooner than analog, before files deteriorate, or software and hardware obsolescence. They require additional technical tasks, making them more time consuming to manage.

During my sabbatical, I continued research and training begun during a summer fellowship. This included identifying pertinent websites and written articles and reports. I organized my research findings into two spreadsheets then started reading. I am one

of 263 people to hold a Digital Archives specialist national certificate.

After wrestling to integrate all that I learned, I rewrote and expanded the table of contents outlining my book content, wrote all of chapter one with notes and additional resources, and started the glossary, bibliography, and chapter two.

This sabbatical gave me uninterrupted time to think, consider, and debate the theoretical, technical and practical similarities and differences between analog and digital records. I will apply the results of this analysis to both my book and to developing a digital records program within my department.

¹. The Principle of Provenance requires that records made by one creator not be mixed with those of another creator. For example the President's and Treasurer's records are arranged separately in order to better reveal the information in each. The Principle of Original Order says to maintain the original order of records whenever possible.

TRADITIONAL AND CONTEMPORARY PERFORMING ARTS IN SRI LANKA, LINKING CENTURIES, CULTURES, AND CONTINENTS: BASIC AND APPLIED RESEARCH

My primary sabbatical and summer fellowship activity was a two-phased project in Sri Lanka. I spent the first month at Sri Lanka International Buddhist Academy (SIBA) mainly working with English as a second language (ESL) students. I spent the second month in Colombo collaborating with four different arts institutions. Recent (spring 2016) NKU graduate Alexx Rouse, who accompanied me to Sri Lanka in 2015, was my research assistant throughout the project.

At SIBA, I focused primarily on refining a program, "The SIBA Initiative," that I introduced there last summer. That program was designed to employ theatre techniques to help ESL students to learn the language, to speak it more confidently, and generally to gain more confidence in themselves. Secondly, I sat in on Buddhist counseling classes to supplement the NKU psychology courses I completed during my spring 2016 sabbatical semester in partial fulfillment of requirements for the dual license that I currently am pursuing in Drama and Expressive Arts Therapy.

In Colombo, I observed traditional dance classes and conducted workshops at Chitrasena Dance School, Sri Lanka's oldest and most prestigious dance company,



and at The University of Colombo, Sri Palee Campus. Additionally, I conducted workshops with Colombo Poets, a group organized as a platform for young poets to perform, interact and develop their skills in the art of poetry. Finally, I met several times with the founders of Floating Space Theater Company to refine further plans we began to explore last year for a creative cultural exchange project.

SABBATICAL
LEAVE 2015-16

SUMMER
FELLOWSHIP
2016



DARYL L. HARRIS
Theatre and Dance Program

SABBATICAL LEAVE 2015-16



LISA HOLDEN
Department of
Mathematics and Statistics

THEORETICAL INVESTIGATIONS OF STAR FORMATION

Stars begin their life in molecular clouds: areas of dense gas in the interstellar medium that are threaded by turbulent magnetic fields. Within these molecular clouds, the gas is distributed unevenly resulting in denser regions known as cores. Star formation is thought to begin when a core loses support from its magnetic field. As the magnetic field diffuses in a process known as ambipolar diffusion, material from the core begins to “fall in” and the core becomes even denser. Once this region of gas has formed, collapse is inevitable and a young star is formed.

I spent my sabbatical leave, in collaboration with astrophysicists Marco Fatuzzo from Xavier University, and Fred Adams from The University of Michigan at Ann Arbor, exploring the process of ambipolar diffusion. Theoretical explorations of this diffusion process proceed in an iterative manner, with each investigation adopting either a more realistic geometry or including another physical effect. Informed by recent observations, we chose to adopt a cylindrical geometry for the cloud and to include the effects of turbulence in the supporting magnetic field. The resulting model consists of a set of coupled, nonlinear, partial differential equations that can be reduced to a set of ordinary differential equations, thereby making the problem tractable. We used analytical methods to obtain appropriate initial conditions and numerical methods to begin a thorough examination of our system. We made significant headway on this difficult problem, and I am now in a position to involve undergraduates in my research and generate results.

SUMMER FELLOWSHIP 2016



**KRISTINE N.
HOPFENSPERGER**
Department of
Biological Sciences

INCORPORATION OF WETLAND POLICY INTO AQUATIC ECOSYSTEM RESEARCH

During my 2016 faculty summer fellowship, I was able to begin collaboration with The Nature Conservancy to advance my research and teaching efforts in the area of environmental policy. During the last six years, collaborators (including students) and I have collected data on community and ecosystem recovery after stream and wetland restoration. Time was spent this summer analyzing the data from these completed projects and submitting finished manuscripts of the work to peer-reviewed journals. In total, we submitted three manuscripts this summer, and worked on an additional three manuscripts to submit this fall. I worked closely with undergraduate students by training them how to analyze the data and put together a peer-reviewed paper. The papers submitted with my colleague from The Nature Conservancy this summer will support the future proposals we have planned to submit. This summer, I spent time learning detailed information about wetland mitigation banking and the Ohio Rapid Assessment Method for monitoring wetlands. These are key topics in wetland

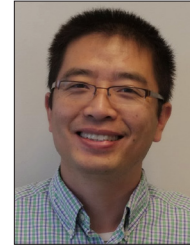


policy that will allow me to move forward with incorporating policy into my current research program and teaching efforts. The summer fellowship was a true benefit to both me and my students, as we were able to disseminate our research on restoration and invasive species to the environmental scientific community.

USING NETWORKED MINIATURIZED COMPUTERS FOR DISTRIBUTED PENETRATION TESTING

Computer security is at odds with business. In business, decisions are made based on whether they produce profits or save the company money. After all, profits are the driving force behind every company's ability to stay in business. It is this process that drives computer security to the fringes of acceptance among businesses. Many companies don't understand the risk they face until it's too late, forcing computer security related decisions to be reactionary. Unwanted malicious attackers who look for and exploit vulnerable computer systems are constantly bombarding IT infrastructures to attempt to steal data. Vulnerability assessment is the practice of testing a computer system, network or application to identify, measure and rank vulnerabilities within the system. This project's goal was to create a distributed vulnerability assessment architecture utilizing multiple miniaturized computers such as Raspberry Pi 2 Model B. The scheme delegates scanning tasks to low-cost and self-contained miniaturized devices for pursuing vulnerability assessment to achieve load balancing and enhanced performance. A cloud-based dashboard application allows each miniaturized computer to register itself and controls the vulnerability assessment process for multiple networks. This allows the security professional to conduct assessment process and view vulnerability reports remotely. We designed and implemented the proposed distributed penetration testing architecture. The performance and assessment results are also analyzed. This summer fellowship project resulted in one paper titled, "Employing Miniaturized Computers for Distributed Vulnerability Assessment." The paper was submitted to the 8th IFIP International Conference on New Technologies, Mobility, and Security for publication in the conference proceedings, and it is currently under review.

SUMMER FELLOWSHIP 2016



YI HU
Department of
Computer Science

EXPERIENTIAL MARKETING EDUCATION FOCUSED ON THE SMALL BUSINESS OR STARTUP ORGANIZATION

For my sabbatical professional development I worked in a series of small companies and organizations to improve my understanding and effectiveness in meeting the unique needs of startup, small and nonprofit employers. This method worked. There were two start ups and two nonprofit organizations for which I worked. The startups had little structure and found it difficult to incorporate my skills. However, from them I learned the real impact of data in this age – and specifically the type of data that impacts marketing of a new enterprise. With the nonprofit assignments I had greater impact and learned the scope of the dependence of businesses on digital and social media marketing.

In the past 10 years, marketing has changed dramatically. The ubiquitousness of the internet and use of digital media for the purposes of building customer relationships and loyalty is unequivocal. Reading and studying to learn these methods are informative, but to become masterful with their application and use this mastery to better teach and prepare students was greatly improved by doing this with organizations that are leveraging the technologies for their success.

The marketing program in the Haile/U.S. Bank College of Business is adopting a new strategy focused on the needs of small businesses and startups. The goal is to create graduates who can enjoy satisfying careers in which their contributions to companies such as these are substantial and ongoing. Time spent with these companies helped to accomplish this objective as I bring my up-to-date understanding back to influence curriculum development, research, and programs to build student professionalism and polish.

SABBATICAL LEAVE 2015-16



EILEEN D. WEISENBACH KELLER
Department of Marketing,
Sports Business, and
Construction Management

SUMMER FELLOWSHIP 2016



SUK-HEE KIM
Department of Counseling,
Social Work, and Leadership

PROMOTING HEALTHY COGNITIVE AGING: A SCIENTIFIC LITERATURE ANALYSIS

Promoting healthy cognitive aging within social work has been raised over the years, but the effectiveness of many preventions and interventions in healthy aging brains has been questioned because of the lack of the evidence. My summer fellowship offered me the opportunity to carry out a scientific research review and analysis related to healthy cognitive aging brain and professional social work. During the fellowship period, I was able to review major trends in healthcare in cognitive aging environments, which impacts social work education, practice, and research—including a shift from in-patient to community care setting and increasing diversity of the older adult population. A systematic review was conducted to determine the effectiveness of promoting healthy cognitive aging that targets mild-cognitive impairment and screening among older adults. In this scientific literature review, quantitative and qualitative outcome studies between 1989 and 2016 were reviewed. I found that educational and social activity group interventions can ease social isolation and loneliness among older adults. However, the effectiveness of home visiting remains unclear. The study also was completed to address a growing area of cognitive aging brain concern and implication for health care providers and professionals. Overall, research findings support positive effects of social and family support, early mild-cognitive screening, quality of social network, healthy choice eating, and physical and mental activity in improving healthy mild-cognitive aging. As a result of this summer fellowship, I submitted the manuscript “Promoting Healthy Cognitive Aging: A Systematic Review and Analysis,” to a peer-reviewed journal.

SABBATICAL LEAVE 2015-16



ISABELLE LAGADIC
Department of Chemistry

INVESTIGATING POLYMER AND MICROWAVE CHEMISTRY FOR THE ADVANCEMENT OF RESEARCH AND TEACHING

The objective of my sabbatical was to investigate areas of polymer-based nanocomposite materials and microwave chemistry to further advance my research and teaching activities. Polymer nanocomposites represent a class of hybrid materials comprising a polymer within which nanofillers (particles, fibers, clay minerals) have been dispersed. Many of the plastic-based materials found in our everyday lives, from car bumpers, to aircraft coatings, to snowboards and tennis racquets, to synthetic clothes and food storage bags, are actually polymer nanocomposites that are either stiffer and tougher or display a better resistance to corrosion and fire or show improved gas and microbial impermeability than pure polymers. During my sabbatical, two undergraduate students and I investigated the microwave-assisted synthesis of polystyrene-organoclay nanocomposites by surface-initiated radical polymerization from the surface of a one-step prepared organoclays containing thiol functional groups as polymerization initiating sites. Undergraduate students presented the results obtained at various regional and national professional meetings. A manuscript was accepted for publication, and another one is currently in preparation. In addition, I was able to gain knowledge on another type of polymerization process (Atom Transfer Radical Polymerization (ATRP)). A grant proposal describing the use of this method coupled with microwave technology for the preparation of our composite materials was submitted to the National Science Foundation. Microwave technology was also used for the improvement of two experiments of our upper-level inorganic chemistry labs. One of these experiments on microwave-assisted synthesis of a coordination complex has been successfully implemented in the lab class taught this semester, and work is currently underway to finalize the second experiment on the microwave-assisted preparation of zinc and cadmium sulfide nanoparticles.

PERSUASIVE ROBOTICS: ROBOT CREDIBILITY

My area of research is to investigate how new communication technologies (for example, robots, virtual agents, and web 2.0) influence people as persuasive agents. To answer this question, I examined how theories of communication and persuasion can take advantage of unique characteristics afforded by these technologies. This new area of research is vital as technologies become more intelligent, sociable, and capable of influencing people through verbal communication. Especially, researchers have started to explore the possibility of using robots as persuasive agents. For instance, Autom, a robotic weight loss coach, encourages people to change their diet and adopt healthy behaviors (Kidd & Breazeal, 2007). Robots also raise funds for nonprofit organizations (Siegel, Breazeal, & Norton, 2009) and increase awareness for energy conservation (Ham & Midden, 2014). What has been lacking so far, however, is a social scientific approach to understanding the persuasiveness of robots (Lee & Liang, 2016).



To understand this, a comprehensive new conceptualization of robots as a source of communication is first required. I conceptualized this term as robot credibility and assessed the dimensionality of it. A factor analysis of survey data revealed that participants' evaluations toward the robot can be divided into three dimensions of credibility: expertise, trustworthiness, and goodwill, which are consistent with the three major dimensions of human credibility (McCroskey & Teven, 1999). The findings suggested that humans apply the same criteria of credibility to robots as they do to humans. This implies that robots can become more persuasive by enhancing the three dimensions of credibility.

SUMMER FELLOWSHIP 2016



SEUNGCHEOL AUSTIN LEE
Department of Communication

SABBATICAL LEAVE 2015-16



MARC LEONE
Visual Arts Program

THE ARCHIPELAGOES

I have begun making fragmented works in painting for the installation project titled, *The Archipelagoes*. Additionally, I have made five works on paper mounted on wood that reflect and align with *The Archipelagoes*. This research project is ongoing and continuing to explore a new creative process (paint levying) that will help sustain my unique artistic practice that incorporates traditional and alternative materials in drawing and painting. As I am working to push the boundaries of these materials forward, several important features are crucial in developing the new frontiers of this project, the most important of which is a direct need to make lighter, organic, modular works of art that, when shown in clustered groups, make a dynamic and rather large work or installation.



SABBATICAL LEAVE 2015-16



ARON LEVIN
Department of Marketing,
Sports Business, and
Construction Management

ANALYZING THE JOINT IMPACT OF PARENT AND CHILD ON FAMILY PURCHASES OF HEALTHY VS. UNHEALTHY FOODS: FURTHER EXPLORATION OF THE "NAG" FACTOR

Recently, corporate marketers have been carefully researching millennials (consumers between the ages of 18 and 34) and responding with new retail concepts such as Whole Foods' 365 stores and AT&T, which recently implemented a very successful advertising campaign on Tumblr enhanced for mobile devices. In addition, services such as Uber and Blue Apron have enjoyed success with millennials by capitalizing on the fact that many millennials are delaying driving, desire home product delivery, and want their adventurous gourmet meals to be prepared with relative ease.

In 2015, millennials overtook baby boomers (adults between the ages of 51 and 69) as the largest cohort in the U.S. According to Pew data, there are now 75.4 million millennials in the U.S., compared with 74.9 million baby boomers. As "digital natives" who have grown up in a world of unprecedented growth in technology, millennials have been carefully studied by marketers. A generation that has largely shunned traditional forms of entertainment and media, and spends more than three hours a day on smartphones (TNS, 2015), millennials present challenges and opportunities to marketers. I spent my sabbatical leave researching methodology that can be used to understand and segment millennial consumers. Using this methodology, we show data that highlights differences and similarities between millennials and other generations.

A NEW BOOK ON RACE, GENDER AND CRIMINAL JUSTICE

I was awarded a sabbatical leave for the spring semester of 2016 to complete a manuscript for a single authored text on the topic of race, gender and the criminal justice system. The book is titled, *Is Justice Blind?: Race, Ethnicity, Gender and The Criminal Justice System* and was inspired by the general education course Race, Gender and Crime that I have been teaching at NKU for the last eight years. Currently, there are only two other textbooks that address the issue of race and gender in the criminal justice system, but neither of these texts also include a global component like mine. During my sabbatical, I was able to complete the remaining eleven chapters of this book and submitted the first draft of the completed manuscript to the publisher at the end of June 2016. Currently, I am completing the final edits and the book is on schedule to be published by August of 2017. I also have two presentations based on this book scheduled for the spring semester of 2017, where I will be presenting on the topic of race and the criminal justice system based on information from the text. I will be presenting as part of the Scripps Howard Center for Civic Engagement's Six at Six lecture series as well as at the Newport Public library.

SABBATICAL LEAVE 2015-16



DANIELLE MCDONALD
Department of Political
Science, Criminal Justice, and
Organizational Leadership

THE PRIVATE AND ITS PROBLEMS: REACHES OF INDIVIDUALISM IN HAWTHORNE AND MELVILLE

The purpose of my sabbatical leave was to research and write a draft of a book manuscript that deals with the ways in which Herman Melville and Nathaniel Hawthorne amplify the growing concerns with public and private life in the antebellum U.S. In short, I argue that Hawthorne's fiction exposes the disintegrating distance between public and private actions, and that this disintegration is largely the result of American democratization. Melville, on the other hand, exposes the relationship between freedom and domination that eludes the Emersonian characterization, employing a tragic character of individualism that focuses on one's response to fate.

The project began as an exploration of Hawthorne, but I quickly adopted Melville as an interesting interlocutor, as my manuscript contends that they were each involved in pushing back against the Emersonian individualism that defined American letters in the period. In order to accomplish the task, I first had to acquaint myself with the primary and secondary literature on Melville and Hawthorne. Having taught each author in the past, I was conversant in their work, but had not given *The Scarlet Letter* or *Moby-Dick* extended, critical readings.

After reading and indexing the primary and secondary literature, I used the remainder of my sabbatical to complete three chapters of the book: first, a chapter on the relationship between shame and guilt in *The Scarlet Letter*; second, a chapter on slavery in *Moby-Dick*; and, finally, a significant revision to a chapter on utopia in Hawthorne's *Blithedale Romance*.

SABBATICAL LEAVE 2015-16

SUMMER FELLOWSHIP 2016



JONATHAN MCKENZIE
Department of Political
Science, Criminal Justice, and
Organizational Leadership

PROJECT
GRANT 2015-16

SABBATICAL
LEAVE 2015-16



JOHN J. METZ
Department of History
and Geography

**DOCUMENTING SOCIAL AND ENVIRONMENTAL CHANGE AT CHIMKHOLA,
AN UPPER ELEVATION VILLAGE IN WEST CENTRAL NEPAL**

During my year-long sabbatical, I completed my main task: returning to the Nepalese village I wrote my dissertation on 30 years ago and interviewing 100 households on their current demographics, education levels, farming system use, livestock holdings, and family work history. These data parallel similar data from 30 years ago and are yielding information about changes in the village and society. Out-of-village work continues to be important, but 30 years ago most men were soldiers in the British or Indian armies, while now men are working in the wealthy countries of the Arabian Peninsula. The children and adults are much better educated, and families are having fewer children, heading for a demographic transition to small families. The village itself has new amenities, including reliable electricity, clean water at numerous taps, widespread use of outhouse toilets. Motor roads are one half day's walk now, rather than three days in 1986. The complicated rotation of the farming system remains, but households only partially rely on it, eating purchased rice as much as corn or millet mush. It seems likely that these trends will continue, unless jobs in the Gulf region and elsewhere disappear. In addition to this research, I also explored how to create a study abroad program in Nepal. I visited most of the sites where I had planned to take students and discussed logistics with two contractors. While in the U.S., I worked to complete a long term study of farmers' markets in Greater Cincinnati.

PROJECT
GRANT 2014-16



BRIDGET NICHOLS
Department of Marketing,
Sports Business, and
Construction Management

**FEATURING THE HOMETOWN TEAM IN CAUSE-RELATED
SPORTS MARKETING: A CAUTIONARY TALE FOR LEAGUE-WIDE
ADVERTISING CAMPAIGNS**

The purpose of my project was to investigate the influence of rival and hometown team imagery in a cause-related marketing context in professional sports. The project goals included study design and planning, data collection from a sample of U.S. sports fans, and data analysis. The project grant primarily supported the recruitment and payment of study participants. The project concluded with a sample of more than 1,500 participants from the Cincinnati, Pittsburgh, and Dallas regions.

From this data, we conducted three separate experimental studies (and two more that are to be part of a different paper) that ultimately produced a manuscript which was submitted and recently accepted for publication in a top tier peer-reviewed sports marketing journal: *Sport Marketing Quarterly*. Pieces of the project were also presented at the Association of Marketing Theory and Practice annual conference in March 2015, and the Academy of Marketing Science annual conference in Orlando, Florida in May 2016. This conference reaches an international audience of marketing scholars, and is considered a prestigious organization in the field.

FOCUS ON ONLINE PEDAGOGY

My sabbatical leave focused on three main areas. First, as I had not done any online teaching for nine years, I needed to get up to speed with all the changes in Blackboard and online best practices. The state of the science and online teaching has progressed since I last taught an online course. The fall semester was focused on reviewing Blackboard and viewing active Blackboard courses in addition to updating myself in the pedagogy of online teaching and best practices. Spring and summer 2016 were spent in developing a Blackboard shell in preparation for teaching in fall 2016 by meeting with Evan Downing, an analyst in academic technology at the Center for Innovation and Technology in Education. The second major area for the sabbatical was to extend my knowledge and experience in accreditation activities. During the 2015-16 year, I made five accreditation visits, served on a national evaluation review panel for accreditation, and served on a committee to review five year interim reports for a Southern Association of Colleges and Schools regional accreditation. The third area of focus for the sabbatical was to conduct the project proposed for the Regents professor release time. Since this project was developed almost 10 years ago, the thrust of the spring semester was to determine if the project is still relevant and needed.

SABBATICAL LEAVE 2015-16



DENISE ROBINSON
Department of Advanced
Nursing Studies

GENETIC REGULATION OF THYMUS DEVELOPMENT

During 2015-2016, my lab was supported by a faculty senate project grant to research embryonic development. I was able to involve four NKU undergraduates with this project. We used the African clawed frog, *Xenopus laevis*, as a model organism for vertebrate development. Specifically, we examined the development of the pharynx, a region of the embryo that gives rise to a number of important structures in the head and neck, including the thymus gland. We were able to collect *Xenopus* embryos and examine gene expression in the developing pharynx using two different molecular techniques: *in situ* hybridization and immunohistochemistry. We also manipulated developing *Xenopus* embryos with an inhibitor of the fibroblast growth factor (FGF) signaling pathway to see what role this genetic pathway plays during pharynx development. FGF-inhibited embryos showed changes in certain gene expression patterns. These results will help us start to understand the genetic signaling cascades that normally guide the development of the pharynx. Additionally, this research will help us better understand why certain birth defects occur when the pharynx does not develop properly. Using the techniques we optimized, we will work to verify and extend these results in the future. Each of my research undergraduates presented their



Xenopus frog was used as a model organism for vertebrate development.

results at the Celebration of Student Research and Creativity, and three of them were able to present their projects at the Society for Developmental Biology annual meeting. Additionally, I included the preliminary data from this project grant in an external grant application to the National Institutes of Health (NIH) to hopefully be able to continue this important research.

PROJECT GRANT 2015-16



EMILY SHIFLEY
Department of
Biological Sciences

SABBATICAL
LEAVE 2015-16

PROJECT
GRANT 2015-16



ANDREA LAMBERT SOUTH
Department of Communication

ADOLESCENT RESIDENTIAL TREATMENT CENTER CONSEQUENCES: SHORT AND LONG TERM FAMILY COMMUNICATION IMPLICATIONS AND BEHAVIORS

My year-long sabbatical leave and project grant allowed me to examine families in crisis. Specifically, I analyzed families in which an adolescent was placed in a residential treatment center. These placements were voluntary on the part of the parents and not court mandated. The project grant allowed me meet with representatives of the Child Welfare League in Washington, D.C, and representatives of the Alliance for the Safe, Therapeutic & Appropriate Use of Residential Treatment at the University of South Florida. There were three features of the work I completed: 1) Survey of parents/ children nationwide that were either in treatment centers or chose to put their children in treatment centers; 2) In-depth interviews with survivors of (particularly abusive) treatment centers based in NKY/Cincinnati; and 3) Transcription and analysis of personal journals of treatment center patients and the letters to and from the families of the patients. The transcription resulted in more than 1,000 single-spaced pages that have been analyzed for themes and communication behaviors. Two manuscripts have been submitted for publication, and three more manuscripts are in progress. Future directions include soliciting the Commonwealth for better treatment of the adolescents in court mandated treatment and better oversight of for-profit facilities. In addition, I will be hosting a symposium in March titled: "Kentucky Residential Treatment Summit: Connecting, Educating, Healing." Overall, this research is particularly timely as northern Kentucky faces a heroin epidemic. Many families are desperate for treatment for their adolescent children, but there are many questions and conditions that should be considered in light of my research. The takeaway from my sabbatical is that parents (who clearly want the best for their children) need to be educated about when, why, and where to get their children help. My work will begin to provide that help.

PROJECT
GRANT 2015-16



ERIN D. STROME
Department of
Biological Sciences

DEVELOPING HIGH THROUGHPUT METHODS TO IDENTIFY GENES INVOLVED IN CANCER INCIDENCE

The field of cancer genetics seeks to identify all gene mutations that result in higher incidences of cancer. Broadly, genes are the carriers of our genetic information and the regions of our DNA that encode functional products. Mutations can therefore cause complete loss or alteration of these functional products. As one can imagine, identification of those gene mutations with the largest impact were easiest to find. The focus of current research has shifted to identifying gene mutations, which convey lower (albeit significant) cancer risks. Many studies have relied on a candidate gene approach, wherein prior knowledge is used to identify candidates of interest to be investigated. Many limitations exist in this study design however: 1) prior knowledge of candidates must exist restraining identification of genes whose function might not be obviously linked to known cancer pathways; and 2) very large populations are needed in order to derive statistical significance. Thus, additional methods are needed in order to find as yet unidentified genes. Here, we initiated a pilot study to implement a novel experimental design to circumvent these limitations. Using *Saccharomyces cerevisiae*, we sought to implement a comprehensive screening method to identify mutations for lower-impact genes with roles in cancer incidence. To date, we have developed and standardized a screening mechanism, identified a threshold for genes on interest, and begun the process of screening all 6,700 genes of the yeast genome.

GREENHOUSE GAS (GHG) EMISSIONS FROM HOUSEHOLD TRAVEL IN THE UNITED STATES

During my sabbatical leave in spring 2016, I finished two projects. First, I revised and resubmitted the paper entitled "Do Medicaid and Private-Pay Nursing Home Residents Have Equal Access to Quality Care in Texas Nursing Home Market?" Using panel data from nursing homes in Texas over a 12-year period and applying a system panel data approach, this paper investigates whether Medicaid and private-pay nursing home residents have equal access to quality care. Our regression results suggest that even in the nursing home market with excess capacity, Medicaid patients do not have the same level of access to quality care measured in terms of the proportion of residents with pressure and the proportion of residents with bowel or bladder incontinence. This paper has been published by the *International Journal of Economics and Research* this year. The second project is aimed at examining the impact of travel demand management policy instruments and urban spatial characteristics on greenhouse gas emissions from household travel. A manuscript entitled "Travel Demand Management Policy Instruments, Urban Spatial Characteristics, and Household Greenhouse Gas Emissions from Travel in the U.S. Urban Areas" has been submitted to *Transport Policy* and is currently under review. This paper examines the impact of travel demand management policy instruments and a wide variety of measures of urban spatial characteristics on CO2 emissions from household travel based on more than 27,000 observations from the 2009 National Household Travel Survey (NHTS). The regression results indicate that travel demand management instruments and urban spatial characteristics affect CO2 emissions from household travel in a complicated way. Population-weighted density, rail availability, and TDM instruments such as parking management, promotion of transit use and carpool, and employer-based TDM programs have a moderate but negative impact on CO2 emissions from household travel. On the other hand, employment and population distribution imbalance and major road network density have a moderate but positive impact on CO2 emissions from household travel. I also learned new analytical techniques (including a multilevel structural equation model and integrated panel data model), which will be incorporated into future research and teaching in my intermediate economics classes and upper level electives.

FUEL EFFICIENCY OF THE PASSENGER VEHICLE FLEET: TREND ANALYSIS AND RELATED IMPACT OF GHG EMISSIONS

My project focuses on examining the determinants of urban sprawl in the U.S. based on a panel data set of urbanized areas. The second project is aimed at conducting a trend analysis of the fuel efficiency of the passenger vehicle fleet in the state of Massachusetts. I was motivated to work on the first project because urban sprawl is a topic that has generated much debate and has become an important policy issue in the United States in the past 20 years. Since the discussion of the costs and benefits of urban expansion is an ongoing process and no consensus has been reached regarding the sign of net benefits, it becomes more and more important for us to understand the underlying driving forces of urban sprawl and their impact over time. The project examines the determinants of urban sprawl using a panel dataset of urbanized areas for the period 1990 to 2010. The paper examines the impact of population, household income, transportation cost, and land rent at the urban fringe on urbanized area spatial size. This is done not only within, but also across, urbanized areas over time. A manuscript based on this project is at the stage of finalization and the paper is expected to submit to a quality journal in urban and regional science within this month. The second project is conducted given the critical impact of motor vehicle travel on greenhouse gas emissions. At this stage, I am working on using matching data from different supplementary files. This is a meaningful project and I will continue to work on it.

SABBATICAL
LEAVE 2015-16
SUMMER
FELLOWSHIP
2016



QING SU
Department of
Economics and Finance

SUMMER
FELLOWSHIP
2016



JASON VEST
Music Program

THE SONGS OF RICHARD HUNDLEY: RECORDING AND ANALYSIS

In spring 2016, I began my research of the songs of Richard Hundley. I also attempted to contact Mr. Hundley and set up interviews with him. However, because of his rapidly failing health, he could no longer communicate. I solicited distributors for the recording of Mr. Hundley's songs and Roven Records agreed to distribute the album through Amazon, Naxos, iTunes, as well as sending copies to classical radio stations throughout the United States. In June, I flew to Eugene, Oregon, where I rehearsed and prepared for the recording with pianist Ingrid Keller. We recorded over the course of three days in the Wildish Theater with recording engineer Lance Miller. In the time since, we have edited and worked to mix the tracks for the correct balance and sound. I will receive a master copy of the recording in the next month and will send it, the liner notes, and photos to Roven Records. This will be the first professional recording dedicated to Hundley's songs and will hopefully be a landmark work in the literature. We chose repertoire that included some of his most iconic and widely-performed songs, but also many that were only recently published and have never been recorded at all. I will then be collecting my research and observations from the recording process. These materials will form an article that will be submitted to the *Journal of Singing*, the premiere peer-reviewed publication in my discipline. I will be seeking additional funding for a recital tour to promote the album and have had several venues that have expressed interest.

SUMMER
FELLOWSHIP
2016



JAMES WALDEN
Department of
Computer Science

PREDICTING SECURITY VULNERABILITIES IN OPENSLL

My summer fellowship project was an investigation of the cybersecurity of OpenSSL, a software library that is a critical part of Internet infrastructure. I constructed a data set consisting of a 10-year history of security vulnerabilities reported OpenSSL. The last two years of data, which include vulnerabilities reported since the notorious Heartbleed vulnerability in April 2014, also refer to LibreSSL, a fork of OpenSSL that was created by the OpenBSD Foundation in order to produce a more secure alternative to OpenSSL. This additional data lets us compare the impact of two different software development processes on the security of two projects that start from the same code base. I also collected data on the deployment of different versions of OpenSSL and LibreSSL on the public Internet, to observe how much time is required to deploy security fixes.

SOCIAL WORK CURRICULUM DEVELOPMENT IN CENTRAL AND EASTERN EUROPE

In combination with my sabbatical, I was the Fulbright Specialist assigned to the Volodymyr Hnatyuk Ternopil National Pedagogical University that was among the first educational institutions of Ukraine to implement the learning process of the Bologna Declaration. I appreciated the opportunity and assisted in curriculum development, offered a new perspective in teaching students, and consulted with the social work faculty and administrators.



In countries with transitional economies, social problems are inherent in an evolving economic structure. In Ukraine, poverty is widespread phenomenon in urban areas, but particularity in rural regions. HIV is widespread and domestic violence commonplace. Alcohol and drug consumption shortens Ukrainian men's lives substantially. Nonetheless, social programs or social assistance systems do not exist nor adequately protect substantial portions of Ukraine. Over the past decade, many international initiatives have supported the development of social work education and practice in post-communist countries. My Ukrainian colleagues and I conducted

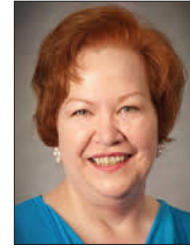
pre and posttests regarding Ukrainian students' social work education outcomes. We would call the learning experience a success but merely a good start.

Going to another country is an amazing opportunity. Yet, for professors, teaching in another country is an educational experience in and of itself. It gives them the chance to learn more about education, to see how students in other countries learn, to explore different methods, and gain teaching experience most educators do not have. More importantly, working in a post-communist country where the social work profession is essentially being created is a gift.



Volodymyr Hnatyuk Ternopil National Pedagogical University

SABBATICAL LEAVE 2015-16



LINDA WERMELING
Department of Counseling,
Social Work, and Leadership

SABBATICAL LEAVE 2015-16



MAGGIE WHITSON
Department of
Biological Sciences

FOCUS ON FLAT PLANTS: RESEARCH, CURATION, AND MODERNIZATION IN THE JOHN W. THIERET HERBARIUM

I am the director and curator of NKU's John W. Thieret Herbarium, our research "library" of approximately 40,000 pressed and dried plant collections. My sabbatical plan was to devote focused time to modernizing the herbarium, developing herbarium-related technology skills, and getting work done on several herbarium-focused research projects.

I set up a specimen imaging station (digital camera and computer), developed a protocol to guide students through taking high quality specimen images, and learned how to work with batches of images in Photoshop Lightroom. I updated our obsolete databasing platform, imported our approximately 3,000 existing records, and attended a three-day workshop at the University of Kansas to learn the new software. I also studied the Darwin Core, a standard format for importing and exporting biological collections



Maggie Whitson standing in a field of invasive Lespedeza plants at the St. Anne Wetlands in northern Kentucky.

records, and then began conversion and import of approximately 6,000 NKU records databased by the Cincinnati Zoo and Botanical Garden. Next, I established an NKU account with the SERNEC portal of the Symbiota project and exported our database records to them, making those records available to any researcher with internet access. Finally, I established two new herbarium web pages and linked them to our online collections records database, which now includes almost 8,000 entries.

I collected plants in Kentucky and Mississippi and focused on two large research projects, one on the interaction between non-native birds and cultivated plants, and one on comparing specimen records databases to more traditional botanical works. I presented preliminary data on the second project at the 2015 Kentucky Academy of Science meetings.



The cobalt blue bloom of the oneflower false fiddleleaf is one of the most striking wetland wildflowers of the Southeast.

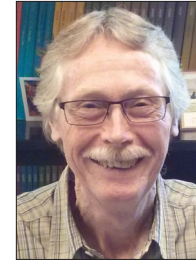


This statue of a bald eagle is one of the many picturesque features of the University of Kansas campus, in Lawrence, Kansas.

THE INDISPENSABLE MARGINAL: RANCHING AND NATURE IN THE HISTORY OF PARAGUAY, 1840-PRESENT

In Fall 2015, I was able to accomplish two goals: a) put the finishing touches on my book manuscript, *Cattle in the Backlands: Mato Grosso and the Evolution of Ranching in the Brazilian Tropics*; and b) collect a considerable amount of secondary source material in preparation for my research trip to Paraguay in 2016. I was also invited in November to offer a mini-course in Latin American environmental history in the History, Law, and Economics Departments at the Universidade Federal de Mato Grosso (UFMT) in Cuiabá, Brazil, entitled, "História Ambiental das Américas." And I gave a talk during my time entitled, "Pecuária e ambiente na História das Américas." In January 2016, I traveled to Paraguay to conduct historical research. I investigate Paraguayan beef production through the methodology of environmental history, and am linking this to its neighbors, particularly Brazil and Argentina. Over the course of roughly three months of intensive research, I visited several libraries and archives, all of which offered crucial source materials. I also learned a great deal about dengue and zika, since they were present in Paraguay and some colleagues and family were afflicted with dengue. During this second part of my sabbatical I travelled to Brazil twice. In April I participated in a Ph.D dissertation defense of a former student from 2008 at the Universidade Federal de Grande Dourados (UFGD), in Dourados, Mato Grosso do Sul. I also gave a talk to history students and faculty at the university entitled "A Historiografia nos Estados Unidos." In July I attended the V Congresso Latinoamericano de História Econômica at the Universidade de São Paulo, where I delivered a paper entitled, "Micróbios, parasitas e a economia da pecuária na periferia: Mato Grosso, Brasil, ca. 1870 a 1950." I am most grateful to the faculty awards committees and NKU for providing me with the opportunity to engage in these activities.

PROJECT
GRANT 2015-16
SABBATICAL
LEAVE 2015-16



ROBERT W. WILCOX
Department of
History and Geography



Robert W. Wilcox with students in Brazil.

PROJECT
GRANT 2015-16

ROLE OF N-METHYL-D-ASPARTATE GLUTAMATE RECEPTORS IN IMPULSIVE CHOICE AND RISKY DECISION MAKING IN RATS



JUSTIN R. YATES
Department of
Psychological Science

We wanted to further determine the role of the glutamate NMDA receptor in delay and probability discounting, purported measures of impulsive and risky choice, respectively. In experiment one, we tested 48 male Sprague Dawley rats in a delay-discounting procedure, in which animals chose between a small immediate reward and a large delayed reward. Animals received injections of various NMDA receptor ligands, including the uncompetitive antagonists ketamine, MK-801, and memantine, the competitive antagonist CGS 19755, the NR2B-selective non-competitive antagonist ifenprodil, and the partial agonist D-cycloserine. When we used traditional analyses (two-way ANOVA), we found that ketamine, memantine, CGS 19755, and ifenprodil increased impulsive choice, whereas D-cycloserine decreased impulsive choice. However, when an exponential model was applied to the data, CGS 19755 and D-cycloserine increased impulsive choice, whereas ketamine, memantine, and ifenprodil decreased sensitivity to reinforcer magnitude without altering impulsive choice. In experiment two, we tested 16 male Sprague Dawley rats in a probability-discounting procedure, in which animals chose between a small, certain reward and a large, probabilistic reward. The probability of receiving the large reward decreased across sessions for half of the rats, but it increased for the other half. Rats received treatments of ketamine, MK-801, and ifenprodil. When the probability decreased across sessions, MK-801 increased risk-taking behavior, but ketamine and ifenprodil did not alter behavior. Conversely, all three drugs decreased risk-taking behavior when the probability of obtaining the large reward increased across the session. These results show that NMDA receptors play an important role in impulsive and risky choice.