

Honors Students Symposium 2015



arts

business

education

engineering

sciences

UNIVERSITY *of*
DAYTON

Honors Program

The thesis component of the Honors Program

consists of a three-semester, six-credit-hour project that culminates in a significant research contribution, performance, or body of creative work.

The Honors thesis project involves a collaboration with one or more faculty members who help direct and focus the student's original thesis topic.

The University Honors Program sponsors the Honors Students Symposium as an opportunity for the students to present their theses to the University community, family and friends.



University Honors Program

presents the

Honors Students Symposium
2015

March 20, 2015
1:00 to 5:00 p.m.
Kennedy Union

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The Patrick F. Palermo Honors Program Founders Fund

provides support for substantive Honors thesis projects "that involve international research, service and leadership in the community, or which advance the realization of a just society."

The awardees for 2014-15 are Megan Flaherty and Nicole Price

The Daniel Arnold Memorial Scholarship

provides a senior-year scholarship for an Honors student from the College of Arts and Sciences who exemplifies Danny Arnold's commitment to research by completing a thesis project.

The awardee for 2014-15 is Madison Irwin

The Berry Summer Thesis Institute

engages a cohort of mid-career Honors students with records of academic success and an interest in research in a 10-week on-campus program. Thesis students present their research-in-progress at the Honors Students Symposium during their junior year and their final projects as seniors.

The members of the 2015 cohort are

Raphael Crum, Caroline Goodill, Jessica Grilliot, Alexandra Hallagan, Elizabeth Kelsch, Alicia Linzmeier, Tyler Masthay, George Padavick, Kiersten Remster and Virginia Saurine

1:00 p.m.

Matthew J. Garbin
Sport Management

1:00 p.m., Room 222
Corinne M. Daprano, Ph.D., Thesis Advisor
Department of Health and Sport Science

***The Legalization of Sports Gambling in the United States:
Impact on Economy, Society, and Sports Leagues***

Sports gambling has been a recent topic of discussion in the United States. The most recent developments involve the attempts of the state of New Jersey to legalize sports gambling, an effort which is still ongoing. New Jersey has felt much resistance from the four major professional sports leagues as well as the NCAA by way of a lawsuit against the state. This lawsuit is predicated on the premise that legalizing sports gambling will negatively impact the integrity of the leagues. There are both negative and positive impacts the legalization of sports gambling in the United States can have. This research analyzes the impacts that can occur in regards to the economy, society, and the sports leagues. In addition, the laws currently in place prohibiting sports gambling will be analyzed, and the steps that can be taken to safely legalize sports gambling are presented.

Maya V. Pedersen
Psychology

1:00 p.m., Room 311
Melissa A. Berry, Ph.D., Thesis Advisor
Psychology Department

Hate Crime Laws: What Are They and Who Do They Protect?

Tremendous disagreement and confusion regarding hate crime laws and the groups protected by them persist. We investigated perceptions of what constitutes a hate crime and whether these standards are applied consistently. Participants read and responded to brief scenarios describing offenses committed by majority or minority group members against others (majority or minority group members). Although support for the exploratory hypotheses was not found, interesting patterns emerged with respect to gender differences.

Maxwell J. Roeske
Biology and Psychology

1:00 p.m., Room 331
Thomas M. Williams, Ph.D., Thesis Advisor
Biology Department

***Tracing the Role of bab Gene Duplication and Divergence Events
in the Evolution of a Fruit Fly Pigmentation Trait***

Mutation events can duplicate a gene resulting in a pair of paralogous genes. Such increases in gene number are thought to open additional paths for the subsequent functional evolution of genes. These paths include changes in protein coding sequences, changes in the sequences regulating gene expression, or a blended path of both coding- and regulatory-sequence evolution. *Drosophila melanogaster* possesses paralogous bab1 and bab2 genes that resulted from an ancestral duplication event. These paralogous genes gained a role in regulating sex-specific coloration. My thesis uses these paralogs as a model to investigate the relative contribution of protein-coding and regulatory sequence evolution in the origin of the coloration phenotype. This involves testing whether the coding sequences for these paralogous genes are functionally equivalent through loss-of-function and gain-of-function methods. Ultimately, this work will demonstrate what changes to an animal gene made the origin of a novel trait possible.

1:20 p.m.

Claire C. Konys
Biology

Berry Summer Thesis Institute 2014 Presenter

***The Role of Polycomb and Trithorax Genes in the Development and Evolution
of an Animal Trait***

Differences in gene expression are a prominent cause for variation in form and behavior among organisms. In eukaryotes, gene expression is regulated through the compaction of DNA sequence into chromatin. Gene expression is by default "OFF" due to a repressive compact chromatin state. Expression can be switched "ON" through the modification of histone proteins and by histone repositioning. In the fruit fly species *Drosophila melanogaster*, the Polycomb Group of genes can induce the formation of repressive chromatin and the Trithorax Group of genes can induce permissive chromatin. How these Polycomb and Trithorax genes collectively regulate the development of a trait and their contribution to the evolution of a trait remains poorly understood. My thesis focuses on answering which genes shape a *Drosophila melanogaster* pigmentation trait, when they are needed during this trait's formation, and whether the uses of these genes have evolved to shape evolutionary changes in pigmentation.

Kathryn M. Schilling
Psychology

1:20 p.m., Room 311
Erin M. O'Mara, Ph.D., Thesis Advisor
Psychology Department

***Examining the Role of Self-Esteem in the Association
Between Emotional Vulnerability and Psychological Well-Being***

Emotional vulnerability can be broadly defined as the idea of allowing oneself to be fully seen and emotionally exposed to others at the risk of being rejected, hurt or ignored. In order to create deep interpersonal connections with others, emotional vulnerability becomes an invaluable psychological trait. Currently, there is not a lot of empirical evidence examining emotional vulnerability and its relationship to psychological well-being. I am interested in understanding whether or not experiencing emotional vulnerability is associated with psychological well-being, and whether that association varies based on level of self-esteem. Stated otherwise, does one's self-esteem influence whether emotional vulnerability is associated with positive or negative psychological well-being? Scholars define psychological well-being as appraisal of one's life where a person gives conscious evaluative judgments about one's satisfaction with life as a whole (Grossi et. al 2013). I predict that emotional vulnerability is associated with psychological well-being and people with higher self-esteem will be associated with better reports of psychological well-being. To test this hypothesis, I will have the participants in my study complete the Rosenberg Self-Esteem Scale (Rosenberg 1965) before assigning half of the participants to a control group and the other half to the experimental condition. The experimental condition participants will be asked to write about a time when they felt emotionally vulnerable. All the participants will then complete the Ryff Scales of Psychological Well-Being (Ryff 1989). The data will be analyzed to determine whether emotional vulnerability has a significant effect on reported measures of well-being and whether this effect is positively or negatively impacted by an individual's level of self-esteem.

Jessica L. Urban

English and Theatre

Mostly True: An Exploration of My Family History

Family histories are tricky things, especially when the people in the stories do not necessarily want to talk about their pasts. My family immigrated to the U.S. in the early 1800's, many to escape the anti-Semitism that was rampant in their countries. Through a series of personal interviews, family stories passed down from generation to generation, and my own imagination to fill in the gaps, I have compiled a series of short stories about my family and their lives in America from their arrival here in the 1800's to the present day. Although each family has a different story to tell, the stories of love, loss, and faith unite all of us, no matter our backgrounds.

Chelsea M. VanHook

Human Rights Studies and
International Studies

***Cocoa and Chocolate : Deconstructing the Development Paradigm
in Cameroon***

The international development program has been lauded in the West as a means of pulling the Third World out of poverty, with institutions such as the World Bank advocating for free trade and deregulated markets towards the creation of a pro-business environment. In Southwest Cameroon, however, the language of "development" takes on a different meaning as people confront the daily challenges of poor roads, changing weather patterns and international pressures to defer to a deregulated market. What is found is a paradox: cocoa farmers selling to buyers who hold monopolies in cities and the average Cameroonian being unable to afford chocolate. This contradiction warrants a deconstructing of the development ideology and its neo-liberal market assumptions. Field research was conducted in the summer of 2014 during the University of Dayton Cameroon Cultural Immersion, with the assistance of state employees in the local community development offices in Kumba, Cameroon.

1:20 p.m., Room 207

Albino Carrillo, MFA, Thesis Advisor
English Department

1:20 p.m., Room 211

Simanti Dasgupta, Ph.D., Thesis Advisor
Sociology, Anthropology and Social Work Department

1:40 p.m.

Christine E. Caldera

Human Rights Studies, Spanish
and Political Science

The State of El Salvador: Human Rights and Violence in the Post-War Era

During the Salvadoran Civil War (1979-1992), the government of El Salvador knowingly used forms of political violence such as disappearances and torture against the political opposition and other innocent civilians, including women and children. With the signing of the Peace Accords in 1992, El Salvador has since transitioned from an authoritarian regime to a democracy. This project focuses on how the change in regime type influenced the level of repression and respect for human rights in El Salvador. The research analyzes two conflict resolution mechanisms, the Peace Accords and Truth Commission, and the implementation of democratic practices such as elections to understand how these mechanisms influenced the respect and protection of Salvadoran's physical security rights. The research shows that despite the introduction of democracy, violence remains prevalent in the form of criminal activity and people continue to fear for their personal security as they did during the war.

Hilary F. Feskanin

Mechanical Engineering

1:40 p.m., Room 310

Joaquin A. Barrios, Ph.D., DPT, Thesis Advisor
Department of Physical Therapy

Kimberly E. Bigelow, Ph.D., Thesis Advisor
Mechanical and Aerospace Engineering Department

Multi-Segment Foot Biomechanics with Varying Foot Orthotic Postings

Foot orthotic devices are often used to treat overuse injuries, over- or under- pronation of the foot, knee pain and other foot disorders. Clinical documentation shows the effectiveness of foot orthoses but there is little understanding of the mechanisms behind these outcomes. Existing studies of foot orthoses focus on rearfoot biomechanics, yet these devices are aimed at changing whole-foot mechanics. Additional research on the mechanical effects of orthoses is often suggested. The main goal of this study was to evaluate the effects of different foot orthotic devices on foot mechanics. In order to assess the effects foot orthoses have on the midfoot, we placed reflective markers on the participant's lower limbs and right foot and recorded the leg mechanics as the participant walked across a 75-foot walkway. We expected directional movement patterns based on the location and type of orthotic posting or lift. It is possible that a better understanding of the effects of orthotic devices can lead to more effective treatments for patients with foot disorders.

Danielle D. Kloke

Sport Management

1:40 p.m., Room 222Peter J. Titlebaum, Ed.D., Thesis Advisor
Department of Health and Sport Science***Premium Food and Beverage Practices in Sport and Entertainment Venues***

Food and beverage service is a significant revenue driver for sport and entertainment venues and recently, it has become a critical opportunity to add value and elevate consumer experiences. Interviews were conducted with industry professionals to gain a better understanding of the current state of food and beverage service and trends for the industry, including pricing, ordering procedures and serving sizes, as well as what changes the industry is looking to add or embrace in the next five years. Trends revealed through the research feature the rise of food and beverage packages to streamline ordering procedures, order customization to enhance the atmosphere, and the use of technology to enrich food ordering and product marketing experiences. The research aims to provide industry professionals with a stronger understanding of how other venues balance costs, consumer preferences and corporate needs to meet expectations.

Hailey J. Kwon

Biology and Philosophy

1:40 p.m., Room 331Madhuri Kango-Singh, Ph.D., Thesis Advisor
Biology Department***Drosophila C-terminal Src Kinase Regulates Growth via Hippo-Signaling Pathway***

The Hippo signaling pathway is involved in regulating tissue size by inhibiting cell proliferation and promoting apoptosis. Aberrant Hippo pathway function is often detected in human cancers and correlates with poor prognosis. The *Drosophila* C-terminal Src kinase (d-Csk) is a genetic modifier of warts (wts), a tumor-suppressor gene in the Hippo pathway, and interacts with the Src oncogene. Reduction in d-Csk expression and the consequent activation of Src are frequently seen in several cancers including hepatocellular and colorectal tumors. Previous studies show that d-Csk regulates cell proliferation and tissue size during development. Given the similarity in the loss-of-function phenotypes of d-Csk and wts, we have investigated the interactions of d-Csk with the Hippo pathway. Here we present multiple lines of evidence suggesting that d-Csk regulates growth via the Hippo signaling pathway. We show that loss of d-Csk caused increased Yki activity, and our genetic epistasis places d-Csk downstream of Dachs. Furthermore, d-Csk requires Yki for its growth regulatory functions, suggesting that d-Csk is another downstream member of the network of genes that interact to regulate Wts and its effector Yki in the Hippo signaling pathway.

Madeline R. McDermott

History

1:40 p.m., Room 207Colleen E. Hoelscher, M.A., MLS, Thesis Advisor
University of Dayton LibrariesJuan C. Santamarina, Ph.D., Thesis Advisor
History Department***Archivum Plena — The Quest for a Fulfilling History:
The History of a High School and the Efforts to Preserve It***

This thesis explores the process of exploring and maintaining the history of a high school in suburban Chicago. Founded in 1888, Lyons Township High School has been an integral part of the district it serves for 125 years. Through the decades, piecemeal efforts have been made to save important historical artifacts for future generations. Part of the thesis

recounts the past of the school, and part of it details the efforts made to maintain items and artifacts of historical value, including a massive project undertaken in the past five years.

Nolan J. McNulty

Psychology

1:40 p.m., Room 311Susan T. Davis, Ph.D., Thesis Advisor
Psychology Department***The Effects of Music on Employee Affect***

This thesis seeks to discover how music can influence the mood of employees. Because I am interested in the roles of business atmosphere and culture, my research investigates if music has any effect on the work climate. Using classical music as a stimulus, I gathered data at the Artstreet Café at the University of Dayton. Employees were exposed to classical music during half of their shift during a period of time and completed a pre-study questionnaire that measured their mood, as well as a post-study questionnaire that identified any effect of the music on mood. My hypothesis was that the music employees were exposed to would influence a positive mood change according to the expectation that the positive nature of the classical music helped to produce a comfortable working environment.

Rachel K. Sales

Environmental Biology

1:40 p.m., Room 312Daniel Goldman, Ph.D., Thesis Advisor
Geology Department***Chitinozoan Biodiversity in the Ordovician of Gondwana:
An Interval-Free Approach Using the Quantitative Stratigraphic
Correlation Program CONOP9***

The purpose of this study is to examine the biodiversity patterns of a group of fossil organisms called chitinozoans. Chitinozoans are organic-walled, planktonic microfossils that first appear in the Early Ordovician Period (488 million years ago) and diversify rapidly through the Paleozoic Era. The Ordovician Period was a time of great global climate change, and by studying this group of fossil plankton, we hope to better understand how modern plankton, which are the base of the marine food chain, might respond to climate change. We used a method called constrained optimization (CONOP9) to construct a composite range chart of 152 chitinozoan species from 64 Ordovician drill cores and outcrops from the paleo-continent Gondwana. Our results show that chitinozoan biodiversity increases throughout the Early and Middle Ordovician, peaks in the middle part of the Late Ordovician and declines thereafter. These results differ from biodiversity estimates derived from more traditional species counting methods.

2:00 p.m.

Nicholas C. Borkey

Biology

2:00 p.m., Room 310

John Letterio, M.D., Thesis Advisor
Pediatric Oncology / Hematology Department
University Hospital and Case Western Reserve University

Robert J. Kearns, Ph.D., Thesis Advisor
Biology Department

Exploring the Role of Neurotrophin Signaling and Cyclin-Dependent Kinase 5 in Brain Metastatic Melanoma

Melanoma, the most deadly form of skin cancer, is becoming an epidemic as an increasing incidence of this disease is seen with each passing year. Furthermore, when melanoma metastasizes to the brain, currently available treatment options are largely ineffective and result in a patient survival rate of less than 15%. The poor prognosis for Brain Metastatic Melanoma illustrates the need for an increased understanding of the pathways that cause melanoma to spread to the brain. This study aims to explore such pathways by studying the connection between two targets; Cyclin-Dependent Kinase 5 (CDK5) and the neurotrophin (NT) family of secretory proteins. CDK5 is a proven therapeutic target in some cancers, while NT are signaling proteins that increase cell functions such as growth, differentiation, and survival; three trademarks of cancerous cells. Ultimately, the results of this research can act as a building block for further study to be conducted, leading to additional treatment options for patients diagnosed with the deadly Brain Metastatic Melanoma.

Morgan E. Draves

Political Science

2:00 p.m., Room 211

Michelle C. Pautz, Ph.D., Thesis Advisor
Political Science Department

Public Service Motivation: Exploring Motives of the Public Sector and Identifying the Pursuit of Vocation

As a University political science student and Honors Program Chaminade Scholar, the themes of public service and vocation have largely influenced my academic curriculum while at the University. Public service motivation has been a thoroughly studied topic within the discipline of public administration and acts as a form of measurement in determining the motives of public servants, including but not limited to organizational structures and a variety of socialization factors. The aim of this project is to find the correlation between public service and the different levels of vocation that are perceived among individuals working in the public sector. Through a series of interviews with and surveys of public servants, a realistic perspective of public service motivation will be obtained. The key objective of this project is to study public service motivation and its components in order to characterize the various levels of vocation that exist within the public sector.

Tanner G. Hess

Geology

2:00 p.m., Room 312

Umesh K. Haritashya, Ph.D., Thesis Advisor
Geology Department

Identifying and Evaluating Possible Trigger Mechanisms for Glacial Lake Outburst Floods in the Hindu Kush Himalayas Using Remote Sensing Satellite Data

The glaciers of the world are melting and retreating at rates faster than ever before, especially in high-mountainous areas. A direct result of this increased ice loss is a higher influx of glacial meltwater which leads to the formation of glacial lakes. As glaciers continue to recede, glacial lakes continue to expand, becoming an ever-growing cause for concern. These lakes are generally held back by glacial moraines comprised of loose, unstable sediment that can become weak and can fail for a multitude of reasons. If the moraines were to ever be breached by the lake water, a phenomenon known as a glacial lake outburst flood (GLOF) can occur, which could send immense amounts of water rushing down the valley, threatening to wipe out entire towns. This study examines various factors in the surrounding lake environment (weak dams, avalanches, etc.) that could cause glacial lakes to breach their natural dams using satellite imagery techniques and analysis.

Genevieve M. Kocoloski

Exercise Physiology

Berry Summer Thesis Institute 2014 Presenter

2:00 p.m., Room 222

Anne R. Crecelius, Ph.D., Thesis Advisor
Department of Health and Sport Science

Effects of Single-Dose Dietary Nitrate on Oxygen Consumption During and After Prolonged Submaximal Exercise in Healthy Humans

Dietary nitrate has been shown to impact oxygen consumption and exercise performance in many prior studies. To date, previous investigations have observed effects of dietary nitrate, in the form of beetroot juice, at moderate and high-intensity exercise, and often in trained athletes. However, there is a lack of data regarding the potential impact of dietary nitrate on post-exercise oxygen consumption (EPOC) in untrained individuals. Therefore, we tested the hypothesis that acute dietary nitrate supplementation would lower oxygen consumption during and after prolonged submaximal exercise. After testing, results show that nitrate supplementation may have performance benefits for highly trained athletes, but in recreationally active males, there appears to be minimal changes in oxygen consumption during and following submaximal prolonged exercise.

Giuseppe G. Miranda

Psychology

2:00 p.m., Room 311

Susan T. Davis, Ph.D., Thesis Advisor
Psychology Department

The Effects of Music-Induced Emotions on Recall of a Story

Music is a powerful medium of personal expression and can likewise create a powerful emotional experience. Music can be nostalgic and bring back to mind seemingly detailed memories of a time in the past. The present research question asked how music affects recall of a story. Specifically, participants, equipped with a heart rate monitor, listened to pre-determined classical fear-inducing music while reading a fear-inducing story. A short time after this story and music presentation, participants were given a surprise recall test on information from the story. A control condition displayed the story with no music. A total of 62 participants progressed through this study while completing various questionnaires that evaluated their emotional state at different times. With data currently under statistical evaluation and analysis, I hope to see an effect of music on heart rate that corresponds with better performance on the recall test.

Wujian Zhang

Biology

2:00 p.m., Room 331

Madhuri Kango-Singh, Ph.D., Thesis Advisor
Biology Department

Testing the Role of Hippo Signaling in Tissue Remodeling

The gene expression is controlled by different signaling pathways during the development of an organism. The Hippo pathway is one of the several signaling pathways that required for an organism's normal development by controlling organ size in animals through the regulation of cell proliferation and apoptosis. In general, our study focuses on the mechanism of tissue remodeling under this specific genetic transcription pathway in *Drosophila* cells. Because tissue remodeling or transformation underlies many disorders including cancer (e.g. Barrett's precancerous condition, the changing of squamous cells to columnar cells, which is controlled by Hippo pathway), and is very similar for both *Drosophila* and human, the study of *Drosophila* tissue remodeling provides us a simpler system to study changes that occur in human cancer. Based on this basic idea, we specifically designed a model to look for the changes between cell types that related to human esophagus cancer.

2:20 p.m.

Jessica L. Beebe

Biology

2:20 p.m., Room 310

Panagiotis A. Tsonis, Ph.D., Thesis Advisor
Biology Department

Manipulation of the Wnt Signaling Pathway and Analysis of Gene Expression in Axolotls

Without the ability to create new tissue, humans are limited in their capacity to regain lost function after severe injury. However, some organisms, such as axolotls, do possess this capability. In particular, axolotls are studied in relation to lens regeneration because of their ability to regenerate within two weeks of hatching and the incapability after this point in time. The axolotls contain the same genes that allows for specific manipulation during both time periods and examination of the different outcomes in hope of revealing the cause of regeneration. The goal of the current project is to study tissue regeneration at the molecular level, by analyzing genes within a specific biological pathway, in order to gain further insight about the mechanism of regeneration. When the mechanism of tissue regeneration is entirely understood, this research could be used to provide treatment in humans with severe tissue damage.

Kimberly M. Land

Women's and Gender Studies

2:20 p.m., Room 211

Rebecca S. Whisnant, Ph.D., Thesis Advisor
Philosophy Department

Female Bodybuilders: Caught in the Crossfire of Patriarchy and Capitalism

This project examines the evolution of women's presence in the bodybuilding industry in relation to the newest and exponentially popular category, bikini. Bikini was created to increase the revenues of the major bodybuilding companies by attracting more competitors and spectators. While on the surface a profit driven motive does not seem immoral, when one examines the psychological and physical damage the prepping and post-competition process does to bikini competitors (more so than any other bodybuilding category) it can be seen that women's bodies are particularly expendable when profit is at stake. The experiences unique to women competitors within the bodybuilding industry, and particularly within bikini, demonstrate the degrading, immobilizing, and sexist reality for women when caught in the intersection of patriarchy, capitalism, and an industry that thrives off the exploitation of women's bodies.

Mary P. List

Biology

2:20 p.m., Room 312

Thomas M. Williams, Ph.D., Thesis Advisor
Biology Department

Seeing Gene Expression in Space, Time and Color: Evaluating New Fluorescent Proteins for the Study of Gene Regulation in Fruit Flies

Animals, including fruit flies and humans, use DNA sequences called enhancers to switch genes "ON" in the correct cells (space), and the correct point in life (time). Mutations in these sequences can cause switch activities to differ between individuals of one species, and over evolutionary time such mutations can be used to adapt populations/species to changing environments. Reporter transgenes are an effective tool to study the switch-like activities of enhancers, where the activity can be seen by detecting the production of a fluorescent protein. However, comparisons of different enhancers in the same animal

requires multiple fluorescent proteins whose color emission properties are clearly distinguishable and whose activity at one time point can be distinguished from those occurring at a later time point. My thesis project customized reporter transgenes to functionally study enhancers by making and comparing a set of fluorescent proteins in the fruit fly species *Drosophila melanogaster*.

Yi Liu

Psychology and Biology

2:20 p.m., Room 311

Ronald M. Katsuyama, Ph.D., Thesis Advisor
Psychology Department

Are Young Children's Music Preferences Associated with the Singer's Race?

This thesis examines the influence of singers' race upon kindergarten children's ratings of the singing of two familiar songs, "Old MacDonald" and "Twinkle Twinkle Little Star." Each song is presented twice by female singers and twice by male singers, with the same soundtrack used for each same-sex pair. Within each pair one singer is African American and the other singer is White. Differences in the ratings of African American singers and White singers could represent young children's racial/ethnic identity, which is compared across African American and White children.

Austin J. Roebke

PreMedicine

2:20 p.m., Room 331

Madhuri Kango-Singh, Ph.D., Thesis Advisor
Biology Department

A Drosophila Brain Tumor Model to Study Interclonal Interactions

The current standard of care for Glioblastoma (GBM), the most common form of primary brain tumors, involves surgery followed by radiation/chemotherapy; however, analyses of patient samples reveal a difference in the composition of the tumor that could account for differences in response to the current standard of care. Therefore, there is a need to model these brain tumors. We have created a simple glioma in *Drosophila melanogaster* (fruit fly) to study these tumors. We have identified three cell death causing genes shown to have a role in these brain tumors in *Drosophila* and humans. Thus, we tested if these three genes are required for tumor growth in two different glioma models in *Drosophila*. Furthermore, we tested if *Drosophila* glioma cells can initiate tumor repopulation following radiation treatment, a common issue with glioma patients. Our progress with these models will be discussed.

2:40 p.m.

Brian D. Bates

Finance and Operations Management

Berry Summer Thesis Institute 2014 Presenter

2:40 p.m., Room 211

Trevor C. Collier, Ph.D., Thesis Advisor

Economics and Finance Department

The Impact of E-Commerce on Big-Box Retailers

The history of retail has been an evolutionary process of new innovations and transformations. It is possible that we are dawning upon a new revolution of the retail environment as electronic commerce (e-commerce) continues to grow. This study will analyze the impact of e-commerce on retail markets, specifically big-box stores (defined as stores between 50,000 and 200,000 square feet) using financial and real estate data. Two separate models will be utilized to answer the following questions. Has the growth of e-commerce affected the retail real estate market? Which retail submarkets have been affected most by the growth of e-commerce? Are big-box retailers with burgeoning e-commerce programs less at risk to the growth of e-commerce than those with none?

Madison N. Irwin

Biology

2:40 p.m., Room 331

Amit Singh, Ph.D., Thesis Advisor

Madhuri Kango-Singh, Ph.D., Thesis Advisor

Biology Department

The Role of the Hippo-Signaling Pathway and JNK-Signaling Pathway in Amyloid Beta 42 Mediated Cell Death in the Drosophila Eye

Alzheimer's disease (AD) is a progressive neurodegenerative disorder with no effective cure. The clinical manifestation of AD involves gradual decline in cognitive functions of learning and memory due to selective atrophy of the brain. The neurodegeneration associated with AD also coincides with accumulation of amyloid beta 42 (A β 42) plaques. Understanding the fundamental mechanisms and the pathways that regulate amyloid accumulation can provide important insights into the pathobiology of AD. The fruit fly *Drosophila melanogaster* is an excellent model for human diseases, including AD, because of its large repository of mutants and similar genetic makeup to humans. We have developed a *Drosophila* model of AD by over-expressing the human A β 42 peptide in the fly retina. Using this model we have shown that cell death pathways are activated in neurons leading to their death, identified a neuroprotective role for the Hippo pathway, and elucidated the nature of its interaction with JNK signaling.

Morgan E. Pair

Psychology

Berry Summer Thesis Institute 2014 Presenter

2:40 p.m., Room 311

Robert J. Crutcher, Ph.D., Thesis Advisor

Psychology Department

The Effectiveness of Active Verbs in Interactive Visual Imagery Created by the Keyword Method

Interactive visual imagery has proven to be an effective method for learning. In particular, interactive visual imagery is used to learn concrete word pairs, such as when learning a foreign language. Another proven mnemonic method is the keyword method. In the keyword method, a word based on the foreign word is used to relate the pairing. This study investigates why interactive visual imagery is so effective by using the scenes created by the keyword method to learn word pairs. One possible explanation for this is the nature of the verbs used to create the interactive visual image. Participants are presented with two scenes for each word pairing with one scene showing the subjects interacting actively, and the other passively.

3:00 p.m.

Kevin X. Farley
Biology

Search for Eye-Specific Regulatory Sequences of an Axial Patterning Gene, Defective Proventriculus (dve)

The fruit fly, *Drosophila melanogaster*, serves as an important model system to study axial patterning, a process that transforms a sheet of cells into a fully functional organ. We have identified a new dorsal eye specific gene defective proventriculus (dve), a transcription factor, which is involved in this process. In the *Drosophila* eye, dve is expressed in the dorsal eye margin. The function of a gene is dependent on spatio-temporal gene expression, which is controlled by the regulatory sequences upstream of the target gene. I propose to identify and characterize the upstream enhancer sequences that regulate dve expression in the early dorsal eye disc, pupal retina, and the adult eye. I have identified an eye specific enhancer (regulatory region of DNA which directs dve expression in the eye disc) of dve which better our understanding of the regulation of dve gene expression in the eye.

Megan K. Flaherty
Psychology and Biology

An Examination of the Relationship Between Perceived Social Support and Medication Adherence in Uninsured Patients with Hypertension

High blood pressure is a chronic medical condition that often requires patients to take medications regularly for successful management. It is common, however, for some patients not to take their medications as directed for various reasons. Patients, especially those without health insurance, might encounter barriers to taking their medications as prescribed. These obstacles are complex and might include the cost of medications, asymptomatic episodes, and lack of understanding. It is important to understand factors that might influence behaviors and decisions about taking prescribed medications in order to provide quality health care. This project explores the possible relationship between perceived social support and medication compliance through surveys completed by 79 patients with high blood pressure at an urban free medical clinic. In addition to analysis of survey responses, we assessed medication adherence by studying the timeliness of high blood pressure medication pick-ups at the clinic's pharmacy.

Zixi Li
Finance and Economics

Influence of Behavioral Finance on Decision-Making in the Business World

Behavioral Finance is defined as the potential implications of psychological factors affecting investor behavior in financial markets. In this project, I would like to discuss different types of behavioral finance, analyze the reasons and connotations behind each type of behavioral finance, and illustrate the influences and consequences with regard to the investor behaviors in the real business world. In addition, I would like to talk about the methods of how to avoid and overcome the behavioral finance in both theoretical and psychological aspects.

3:00 p.m., Room 331
Amit Singh, Ph.D., Thesis Advisor
Biology Department

3:00 p.m., Room 311
Keri J. Brown Kirschman, Ph.D., Thesis Advisor
Psychology Department

3:00 p.m., Room 211
Ting J. Zhang, Ph.D., Thesis Advisor
Economics and Finance Department

Kelly F. Miller
Communication

An Analysis of Corporate Social Responsibility Websites: Seafood Production and Environmental Degradation

Corporations are under increasing pressure from internal and external stakeholders to consider the social and environmental cost of their operations. To alleviate this concern, corporations have designed professional ethical codes by which to conduct business. This expanding practice is a facet of public relations known as "Corporate Social Responsibility," or CSR. This project examines the seafood production industry. Seafood production poses unique environmental concerns, which can be addressed by producers in a variety of ways. A content analysis of the top seafood production websites investigates which environmental themes are being addressed in CSR policies and information pages, and how corporations are measuring their impact.

Michael T. Ohradzansky
Electrical Engineering

Autonomous Control of an Electric Ducted Fan-Pendulum System: A Study of Control Theory and Modern Electronics

As a demonstration of a complex, autonomous control system, an electric ducted fan is mounted to the end of a revolving arm. By precisely vectoring the thrust generated by the fan, the orientation of the arm and location of the ducted fan can be controlled. The system explores the capabilities of modern battery operated electronics with the incorporation of a PixHawk flight controller, an 80 amp electronic speed controller, two metal gear servos and an electric ducted fan. The project has a large emphasis on prototyping, and many of the system parts were created using 3D modeling and additive manufacturing. The dynamic system has been modeled in MatLab in order to simulate the response of the system based on different initial conditions.

Vincent E. Spahr
Civil Engineering

A Safety and Operational Performance Comparison of Roundabouts Versus Traditional Intersections

As roundabouts become a more popular option for intersection design and re-design in Ohio and nation-wide, this presentation will speak to the safety and operational advantages of roundabouts as compared to more traditional intersection types. Specifically, the presenter observed and analyzed an area of Dublin, Ohio with multiple intersections of various types and will share the results of this research.

3:00 p.m., Room 207
Jee-Hee Han, Ph.D., Thesis Advisor
Communication Department

3:00 p.m., Room 312
Raul E. Ordenez, Ph.D., Thesis Advisor
Electrical and Computer Engineering Department

3:00 p.m., Room 222
Deogratias Eustace, Ph.D., P.E., PTOE, Thesis Advisor
Civil and Environmental Engineering Department

3:20 p.m.

Clare A. Kelly

Biology

3:20 p.m., Room 331

Karolyn M. Hansen, Ph.D., Thesis Advisor
Biology Department

Utilization of Electroantennography (EAG) to Determine the Response of Male *Lucilia sericata* Flies to Female Pheromones.

The green bottle fly, *Lucilia sericata*, is an organism of great entomological and ecological significance, as it is one of the first fly species to colonize a decaying carcass. The age and presence of developmental stages of *Lucilia sericata* larvae serve as a valid indication of the post-mortem interval (PMI), or time since death. This species exhibits a stark sexually dimorphic behavior with respect to the odor stimulus that attracts the male and female adult flies to the carcass. While it is widely accepted that females respond to volatiles organic compounds (VOC) that are characteristic of decomposition, as these odors indicate a protein source, the attraction stimulus for the males is highly debated. Previous research has found that females are attracted to the carcass for two functions: for a protein/food source and for laying eggs. The males require very little protein in the diet so the presumed attraction to the carcass is for mating. This sexual dimorphism serves as the foundation of my research. Through the utilization of behavioral studies (choice response) and electroantennography (EAG; physiological response), I have measured and analyzed the response of male *Lucilia sericata* of various ages exposed to a suite of VOCs, including specific decomposition volatiles, as well as the response to female pheromones. This research will add to the body of work on the basic ecology and behavior of *Lucilia sericata* as well as further inform the process of blow fly utilization of decaying carrion with respect to forensic applications.

Robin E. Ker

Mechanical Engineering

3:20 p.m., Room 222

Margaret F. Pinnell, Ph.D., Thesis Advisor
Mechanical and Aerospace Engineering Department

School Books on Tape: The Tensile and Adhesive Strength of Duct Tape in a College Backpack

Duct tape is an extremely versatile combination of adhesives, polymers, and fibers, used to do almost everything from securing pipework to making prom dresses. The adhesive component can be very strong, but it must be applied over a large enough area so that it can properly grip onto surfaces. This minimum required area was determined for five different kinds of tape through tensile and lap shear testing. After the load carrying capacity and the necessary adhesive area were determined, backpacks were constructed out of the types of duct tape which have the properties necessary to safely support a full load of textbooks (25 lbs.).

Colin M. Kloock

Chemistry

3:20 p.m., Room 310

Vladimir A. Benin, Ph.D., Thesis Advisor
Chemistry Department

Synthesis of Potential Phosphorus-Nitrogen Containing Flame Retardants

Production of extremely efficient flame retardants is ideal because, in many instances, the amount of flame retardants that are added to pre-production to the mixture are so large that they can have an effect on the physical properties of the material. In addition, these

types of polymers, when added during production, are homogeneously mixed throughout the mixture which means not only uniform distribution and therefore function, but a less concentration of the retardants need to be used.

Ryan M. Krisby

English and Philosophy

3:20 p.m., Room 207

Joseph R. Pici, M.A., Thesis Advisor
English Department

Lessons in Worldbuilding

Worldbuilding is the art of constructing a fictional world and is an important craft for every writer in the fantasy genre. An author's constructed world must be believable and carry such qualities history, geography, culture and ecology. Ryan Krisby shares the lessons he has learned in the art of worldbuilding during the course of working on his second manuscript.

Nathaniel M. Lundy

Chemistry

3:20 p.m., Room 312

Shawn M. Swavey, Ph.D., Thesis Advisor
Chemistry Department

Facile Solventless Reactions Leading to New Organic Chromophores: Synthesis, Characterization and Applications

Organic chemical compounds tend to be synthesized in a manner that requires large amounts of potent solvent(s) and results in waste and toxic byproducts. This new family of reactions occurs under solventless conditions and results in products with exciting light absorbing properties. Furthermore, the conditions of these reactions lead to minimal waste and byproducts, demonstrating environmentally-friendly synthetic routes. Potential applications for these products include activity as solar cell dyes or as absorbing agents for photodynamic therapy cancer treatments.

Ashley Ann Marshall

Psychology

3:20 p.m., Room 311

Jack J. Bauer, Ph.D., Thesis Advisor
Psychology Department

Does Study Abroad Impact Students' Personalities?

International education is universally valued both in academics and the job market because of the perception that those who study abroad have increased intercultural awareness, experience with diversity, and opportunity for personal growth. Given that students who are studying abroad are experiencing increased independence and experience with a new culture, this is a potential time for the development of perspective-taking, empathic concern, non-prejudice, and other forms of personal growth. The present, longitudinal study collected narrative and non-narrative data on these qualities of personality development before, during and after the participants' studies. For comparison, we gathered the same measures with a group of students who were taking a summer course on campus. Contrary to popular views of studying abroad, we did not find evidence that summer study abroad facilitated personality development more so than summer study on campus. We did find that students were more likely to report personal growth after studying abroad than studying on campus, but this was explained by the fact that the study-abroad group had higher expectations for personal growth before summer studies.

Elizabeth M. Wilhelm

History and Sociology

3:20 p.m., Room 211

Karen A. Bartley, Ph.D., Thesis Advisor
History Department

Theo J. Majka, Ph.D., Thesis Advisor
Sociology, Anthropology and Social Work Department

***Black, White and In-between: Race and Ethnicity
in the Criminal Justice System 1885-1915***

Events in the past year have brought racial and ethnic and discrimination in the criminal justice system to the forefront of American consciousness. In reality, race has been used to create stereotypes for centuries, often supported by “scientific” and “statistical” evidence to support the idea that certain races are more likely to commit crimes than others.

In my research, I trace the development of these ideas as well as the evidence used to support these racial notions primarily by drawing upon conference transcripts from two professional organizations: The National Prison Association and the National Conference of Charities and Corrections covering the years 1885-1915. While the analysis of these stereotypes includes African Americans, I focus on the stereotyping of foreign-born and second-generation Americans as well as those who were not considered white a century ago, such as “Chinese, Japanese and civilized Indians.”

3:40 p.m.

Sara R. Alakkad

Biology and Finance

3:40 p.m., Room 310

Vladimir A. Benin, Ph.D., Thesis Advisor
Chemistry Department

Synthesis of Phosphorus-Based Hemiacetals for Potential Flame Retardants

The goal of this research project was to develop flame retardants which contain the element phosphorus. The starting materials used were carbohydrates, or sugars, that are also polyols, molecules containing multiple alcohol groups. Particularly, three-carbon sugars and five-carbon sugars are the main focus. Using these starting materials may be beneficial for synthetic purposes as they are found in nature and they are also not harmful. To synthesize the final flame retardant compounds, a multi-step mechanism takes place in which the carbohydrate is protected and reacted with a dialkyl phosphite, resulting in a phosphorus-based hemiacetal.

Krista E. Bondi

Art History and American Studies

Berry Summer Thesis Institute 2014 Presenter

3:40 p.m., Room 211

Roger J. Crum, Ph.D., Thesis Advisor

Art and Design Department

***The Interfaith Campus: The Question of Diverse Sacred Spaces
in Catholic Higher Education***

In today's globalized society, Catholic universities like the University of Dayton must consider the well-being of their diverse student communities. Recently, the University of Dayton — like other Catholic universities — has seen a growth in international students and, consequently, students of different faiths. As a result the University is experiencing the reality of, or need for, interfaith dialogue, even as the evidence of the renovation of the Immaculate Conception Chapel underscores the continued need to emphasize UD's traditional Catholic identity and mission. This research examines the availability, or lack thereof, of sacred spaces for students of all faiths at Dayton and looks toward other institutions for potential guidance in fostering such interfaith dialogue.

Allison K. Carey

English

3:40 p.m., Room 207

John P. McCombe, Ph.D., Thesis Advisor
English Department

Sherlock Holmes and James Moriarty: Victorian Genius in a Millennial World

In 1887, Sir Arthur Conan Doyle published his first novel regarding the detective Sherlock Holmes. He would go on to publish another three novels and over 50 short stories detailing the great detective's endeavors. Today, 128 years later, Conan Doyle's Sherlock Holmes is as popular, as relevant, and as alive as ever. Adaptations continue to be made and achieve success, including the BBC's mini-series, *Sherlock*. This modern adaptation and its interpretation of Conan Doyle's characters, novels, stories, plots, and themes allow for a unique combination of Victorian and Modern England. It highlights the similarities and differences of a Victorian Holmes and a 21st Century Sherlock while also commenting on both eras overall. In particular, an increased focus on the relationship between Holmes and his arch-nemesis, James Moriarty, generates new interest in these characters' significance to the series' legacy.

Christopher S. Morrow

Biochemistry

3:40 p.m., Room 312

Matthew E. Lopper, Ph.D., Thesis Advisor
Chemistry Department

***Exploration of Protein-Protein Interactions Involving
Deinococcus radiodurans PriA, DnaB and SSB.***

Deinococcus radiodurans is a species of bacteria that has sparked a lot of interest since its discovery due to its incredible resistance to ionizing radiation. When exposed to ionizing radiation, the DNA of a cell will become shattered and broken apart. This is often a lethal event since damaged DNA will leave cells unable to faithfully copy their DNA, thus preventing the cells from growing and dividing to make more cells. *D. radiodurans* demonstrates the rare ability to remain viable after exposure to high levels of ionizing radiation by repairing its DNA. This project was aimed at exploring how several of the proteins in *D. radiodurans* that are suspected to be responsible for this exceptional ability interact with each other.

Kathryn C. Oehlman

PreMedicine and Psychology

3:40 p.m., Room 331

Panagiotis A. Tsonis, Ph.D., Thesis Advisor
Biology Department

***Characterization of the p53 Signaling Pathway in Urodele Amphibians
During Lens Regeneration***

Urodele amphibians such as the red spotted newt, *Notophthalmus viridescens*, and axolotl are commonly used to study organ regeneration. The newt is able to regenerate the lens in 30 days following removal. Additionally, axolotls, a neonate salamander, invoke curiosity because although they have the same regeneration potential as newts for limb, tail and spinal cord it was long thought that they were incapable of lens regeneration. Using these animal models we can further examine the role of the p53 protein, a tumor suppressor protein, in regeneration and cell cycle regulation. It has been shown in previous studies that when disrupting p53 limb regeneration is impaired. The outcome of this study will help in the understanding a potential new role of p53 and its signaling partners during lens regeneration.

Claire A. Sonneborn

Mathematics

3:40 p.m., Room 311

Aparna W. Higgins, Ph.D., Thesis Advisor
Mathematics Department

Root Cover Pebbling on Graphs

A graph is a mathematical object that can be described as a set of vertices and a set of edges. An edge joins one vertex to another. The existence or absence of an edge between two vertices can represent a relationship or absence of a relationship between two objects. Two vertices are said to be adjacent if there is an edge that joins them. Imagine placing pebbles on the vertices of a graph. We can move a pebble from one vertex to an adjacent vertex using certain pebbling moves. We have defined a concept called root cover pebbling where we begin with all pebbles on one vertex of a certain graph and attempt to place at least one pebble on every vertex of the graph by using pebbling moves. We construct an algorithm for calculating root cover pebbling numbers for certain graphs and discuss changes in this number when edges are added to or removed from a graph.

Mary A. Willard

Exercise Physiology

3:40 p.m., Room 222

Kurt J. Jackson, Ph.D., Thesis Advisor
Department of Physical Therapy

Muscle Activity With the Use of a Compact Elliptical Trainer

Neurological disorders such as stroke, Parkinson's disease and multiple sclerosis are a leading cause of long-term disability. As a result, individuals with neurological disorders often have low activity levels and have difficulty participating in regular exercise to maintain health and fitness. Some of these barriers include safety, transportation and cost. As a result, finding a safe and effective means of exercise is difficult. The purpose of this study was to evaluate the effectiveness of an affordable home exercise device for promoting muscle activity in the lower extremities. Ten individuals without neurological disorders were tested in this pilot investigation. Subjects used the elliptical trainer under eight different conditions in a randomized order. During each condition, muscle activity of the lower extremity was measured using surface electromyography (EMG) to determine which condition elicited the greatest muscle activity. Data from this investigation will be useful in future trials involving individuals with neurological disorders.

4:00 p.m.

Luke F. Bugada

Chemical Engineering

Berry Summer Thesis Institute 2014 Presenter

4:00 p.m., Room 312

Matthew E. Lopper, Ph.D., Thesis Advisor
Chemistry Department

***The Use of a Molecular Probe to Investigate the Details
of PriA Helicase Function***

DNA replication in bacteria is an essential process through which a cell's genetic information is copied. The replication machinery often encounters DNA damage that can disrupt a cell's ability to completely copy its DNA. For DNA replication to resume following these disruptive events, the replication machinery must be reloaded onto the DNA through a process initiated by the PriA helicase. We seek to better understand how PriA works by using a compound that inhibits the function of PriA. We have determined the specific mode through which the compound inhibits PriA and are working to solve the three dimensional structure of the PriA-inhibitor complex. Finally, we are attempting to pinpoint where the inhibitor binds on the surface of PriA. Our findings will contribute to understanding the mechanism through which PriA rescues the replication machinery following disruptive encounters with DNA damage.

Mark J. Edmonds

Computer Engineering

4:00 p.m., Room 311

Tarek M. Taha, Ph.D., Thesis Advisor
Electrical and Computer Engineering Department

Scott A. Douglass, Ph.D., Thesis Advisor
United States Air Force

Accelerated Declarative Memory

Enabling machines to mimic the human decision-making process would have many practical uses such as self-driving cars, digital doctors, and making sense of the vast amount of internet data. Cognitive architectures mathematically capture the human decision-making process and can be implemented in modern computers for everyday use. Given the vast knowledge bases humans store, a computer cognitive agent needs to process massive volumes of data as well. Knowledge retrieval has to be done very fast to enable real-time decisions. This project accelerated a cognitive architecture being developed at the Air Force Research Lab on specialized computers known as Graphics Processing Units (GPUs). GPUs can process large amounts of data in parallel and are ideally suited to this task. This project also examined how to fundamentally reformulate the underlying mathematics to make the agent better suited for GPUs.

Samuel J. Fesenmeier

Biology

4:00 p.m., Room 331Mark G. Nielsen, Ph.D., Thesis Advisor
Biology DepartmentTobias W. Rush, D.A., Thesis Advisor
Music Department***Coding DNA into Music: An Alternate Way of Analysis***

Our study's purpose is to take a completely different approach to understanding DNA, specifically non-coding segments. How we will do this is through coding DNA into music. By applying a system that codes known information of DNA into sound, music could prove to be a powerful means of finding patterns in DNA. It is possible that hearing the segments could allow our brains to pinpoint patterns that are not found through computational or experimental analysis. Music may also open up the expression of complex patterns that are visually hidden. The application of DNA to music will also allow for very long segments to be analyzed in a short period of time. Ideally, discovering certain patterns will lead to a better understanding of function

Annemarie G. Fisher

Early Childhood Education

4:00 p.m., Room 222Jacqualine M. Arnold, Ph.D., Thesis Advisor
Teacher Education Department***Understanding the Role of the Common Core State Standards in Catholic Education***

The Common Core State Standards (CCSS), developed to raise standards for schools across the United States and prepare all students for college and careers, have been adopted by 43 states since their creation. Since the release of the standards, Catholic dioceses and archdioceses have weighed the benefits and disadvantages of the standards. This study examined an archdiocese using the CCSS and an archdiocese using another set of standards, asking what factors led to their decision. Superintendents, principals, and teachers outlined the ways they implemented their standards, the way they viewed academic standards in Catholic education, and the role of professional development in their schools.

Taylor V. Kingston

English and Psychology

4:00 p.m., Room 207John P. McCombe, Ph.D., Thesis Advisor
English Department***The Dystopian Genre: Fitting into the Tracks Laid by Hope and Fear***

In a fusion of behavioral psychology, evolutionary psychology and literary analysis, this thesis considers the possibility that human nature dictates the types of rhetoric utilized in any given genre. Operant conditioning emerged as the governing device in a case study of the dystopian genre since readers must be made to associate fear or hope with particular government structures. Implicitly then, literature is molded into its genres by the human desires addressed by that genre's reigning themes. Interestingly, this "mold" seems to have created a strain of novels within the dystopian genre that are so similar there have been accusations of plagiarism. *Nineteen Eighty-Four*, *Brave New World* and *Anthem* are the novels considered to be uncannily similar to the Russian predecessor, *We*. Looking at how plagiarism is a shallow explanation for the similarities between these novels leads to a compelling conversation about the relationship between human universality and genre structures.

Jordan T. SeitzHistory and Adolescent
to Young Adult Education**4:00 p.m., Room 211**Haimanti Roy, Ph.D., Thesis Advisor
History Department***Practical Cosmopolitans:******The Role of Diversity in a Changing Indian Ocean, 1500-1800***

The Indian Ocean has served as a catalyst for trade throughout history, connecting multiple cultural and geographical spheres. My goal was to dissect the ways in which social and cultural norms were impacted by the large amount of diversity found within Indian Ocean port cities between 1500 and 1800. Specifically, I chose to investigate the possibility of the creation of a virtue of diversity, similar to the concept of Cosmopolitanism. In this case, this would mean a variety of people who differ in cultural, ethnicity, and religion sharing mutual respect within a particular space. Among the factors which shaped these changing values, I explored the impact of changing European influence and the ways in which it both fit and broke this mold. To guide my inquiry within this broad framework, I incorporated a case study focusing on the trade city of Calicut, as well as other ports.

Matthew J. Witzeman

Chemistry

4:00 p.m., Room 310Vladimir A. Benin, Ph.D., Thesis Advisor
Chemistry Department***The Effects of Phosphorous-Based Flame Retardants on Polyurethane Flammability Performance***

Fire safety in the American home has been a topic of many scientific interests. Among these interests are the materials of which everyday household furniture (i.e. beds and couches) is made. A common type of material used in such items is polyurethane, and it is a known substance prone to immediate ignition and flashover effect when met with a fire source. This research project was conducted to address such issues by investigating a protocol for creating safe, flame-retardant polyurethane that was environmentally-friendly and effective against ignition sources. By focusing on a method of chemically incorporating flame retardants into the polyurethanes, products were formed and tested for their flammability properties. Test results confirmed that incorporation of the flame retardants in polyurethane and slightly significant increased flammability performance of the materials were observed, though there was little deviation between effectiveness of different flame retardants.

4:20 p.m.

Katelyn M. Arnold
Chemistry

4:20 p.m., Room 312
Mark B. Masthay, Ph.D., Thesis Advisor
Chemistry Department

Kinetic Characterization of the Photodegradation of Beta-Carotene: Emphasis on the Solution Phase

Beta-carotene, a conjugated organic molecule, is incorporated into the body through our diet where it is then localized within the hydrophobic regions of cell membranes. Beta-carotene is often recognized for its role as an antioxidant, meaning that it plays a key role in quenching free radicals produced from oxidative stress. Interestingly, at high concentrations of oxygen, similar to that in the lungs, researchers suspect beta-carotene acts as a pro-oxidant in subjects who have a history of cigarette smoking. An additional unique property of beta-carotene is that it also degrades when oxygen is absent in the system. The principle objective of this research is to characterize the oxygen-dependent and oxygen-independent mechanisms responsible for the photodegradation of beta-carotene in n-hexane solvent.

Kathryn C. Auletto
Early Childhood Education

4:20 p.m., Room 222
Mary-Kate Sableski, Ph.D., Thesis Advisor
Teacher Education Department

Reading Interventions in Relation to the Ohio Third Grade Reading Guarantee

Ohio's Third Grade Reading Guarantee is a recent piece of legislation that has many implications in education. The law requires that all third grade students who cannot read in third grade must be retained until they are on reading level. The Ohio Department of Education provides districts with research-based reading instructional programs that may be implemented to help students, including Reading Recovery and Orton Gillingham. The research conducted in this study explores the factors affecting a low-income school's decision to select one of these programs. The case study includes interviews with teachers in selected high poverty schools using one of the programs. The interviews provide an illustration of how the Third Grade Reading Guarantee is affecting curriculum, as well as how schools are choosing these reading programs in accordance with the new legislation, and provide valuable information for schools when choosing the appropriate intervention for struggling readers.

Anissa J. Maffett
Psychology

4:20 p.m., Room 311
Erin M. O'Mara, Ph.D., Thesis Advisor
Psychology Department

Too Close for Comfort: The Effect of Threatening Stereotypes on Perceptions of Proximity

Do stereotypes influence how we perceive physical stimuli in our social world? The current project addresses this question by examining whether people differentially perceive targets based on whether a stereotype-based threat accompanies the target. Previous research finds that people evaluate physically threatening stimuli (e.g., spiders, aggressive people) as closer than non-threatening stimuli (Cole Balceitis, & Dunning, 2012). However, less is known about the role of stereotypes in activating a threat response. It is predicted that participants who are made aware of the threatening status of a group will perceive a member of that group as standing physically closer.

Timothy E. Schaefer
History

4:20 p.m., Room 211
Dorian Borbonus, Ph.D., Thesis Advisor
History Department

The Second Punic War: The Foundation of the Roman Empire

The Second Punic War took place in the late 3rd Century BC between two of the Mediterranean's most powerful kingdoms, Carthage and Rome. This second struggle between these powers was fought throughout Italy, Sicily, Sardinia, Southern France, Spain, and Africa. The war stretched Rome's resources to levels higher than any of its previous wars. Due to the pressures Rome experienced through the invasion of Italy by the Carthaginian, Hannibal and Rome's fighting in the various theaters across the Mediterranean, precedents were set that marked a turning point in the city's foundation as the Roman Empire. For the thesis, first the criteria for defining an empire is established. Then Livy is established as a reliable source that can help to identify Rome's change through the war. This sets the stage for identifying the economic, cultural, and political changes that Rome underwent to become an empire.

Sarah A. Stalder
Biology

4:20 p.m., Room 331
Jeffrey L. Kavanaugh, Ph.D., Thesis Advisor
Biology Department

The Effects of Low Dam Removal and Kayak Run Installation on the Biodiversity of Fish and Macroinvertebrates in the Great Miami River in Downtown Dayton, Ohio

In the past few years Five Rivers Metroparks and Miami Conservancy District have made plans to remove the upper portion of the Monument Avenue low-head dam in downtown Dayton due to the hazard it poses for recreation on the river and its negative impact on water quality and biodiversity. The proposal also includes the addition of a kayak course. The proposed changes should improve water quality and biodiversity by returning the river channel to a more natural state. The goal of this project is to analyze the effects of low dam removal on macroinvertebrate and fish communities by measuring the communities before and after low dam removal.

4:40 p.m.

Sarah E. Dubay
Chemistry

4:40 p.m., Room 312
Mark B. Masthay, Ph.D., Thesis Advisor
Chemistry Department

***Kinetic Characterization of the Photodegradation of Beta-Carotene:
Emphasis on the Solid State***

Beta-carotene (β C) is a natural orange pigment best known for imparting color to carrots. It is incorporated into the human body through diet and is an important dietary antioxidant as it protects the body from oxidative stress. β C degrades upon exposure to ultraviolet light and one or more β C photoproducts generated in the presence of oxygen suppress(es) the immune system. In efforts to gain more knowledge on the role of β C in the body, β C(s) was irradiated with broadband light and the kinetics of the photodegradation were characterized. This was done mirroring a thermal degradation study of β C(s) to discover how β C(s) degrades when exposed to light instead of heat. The photodegradation of β C(s) dissolved in n-hexane solution at varying oxygen concentrations was also studied to mimic the photodegradation of β C in a cell membrane and the kinetics of the reactions were characterized.

Bridget K. O'Mera
Psychology

4:40 p.m., Room 311
Benjamin R. Kunz, Ph.D., Thesis Advisor
Psychology Department

The Enhancing Effects of Auditory Information in the Rubber Hand Illusion

Humans perceive the world around them using a combination of many different senses, including sight, sound and touch. Usually these senses work together to create a unitary and robust perception. However, using the principles of perceptual psychology, scientists are able to trick the brain into creating an illusory misperception. We see this in a well-known study called the Rubber Hand Illusion. Here, participants watch a fake hand being touched, while feeling the touch on their real hand, which is hidden from view. Consequently, the visual system takes over, and participants experience the feeling that the fake hand, which they can see, is actually experiencing the touch that they feel on their real hand, as if the fake hand belonged to them. The present experiment sets out to test the influence of sound in our perceptions of the body. We paired the scratching of the hands with a prerecorded scratching noise and found that sound, when paired with visual information, can strengthen the effects of the Rubber Hand Illusion.

Nicole E. Price
History

4:40 p.m., Room 211
Caroline W. Merithew, Ph.D., Thesis Advisor
History Department

"What's so Funny?" Racial and Ethnic Humor, 1850-1930

In the late nineteenth and early twentieth centuries the United States went through many changes when becoming an urbanized and industrial world power. These many changes, coupled with an influx in immigration, created new social tensions within society. These social tensions prompted the creation of new forms of humor that became an outlet for hostilities. Through an analysis of various forms of entertainment, the complex relationship between humor, race, ethnicity and what it means to be American is at the heart of this work. Groups who were not seen as "native" became the targets of frustrations built up from the many changes going on around them. This work looks to uncover and analyze the nature of racial and ethnic humor and how it was used against ethnic and racial "others," as well as the reasons and causes behind its usage.

Riley C. Weber
Intervention Specialist Education
Berry Summer Thesis Institute 2014 Presenter

4:40 p.m., Room 222
Stephen B. Richards, Ed.D., Thesis Advisor
Teacher Education Department

Identification of English Language Learners and Gifted Students

The United States education system has faced challenges and reforms regarding assessment and identification of gifted students in the past fifty years which continue to change as the nation develops new goals and needs (Giuliani & Pierangelo, 2012). In recent years, school demographics have changed due to an influx of students from immigrant families who speak native languages other than English (Carter, 2005). The need for educating this large population of students learning English as a second language has led to new policies and programs developed specifically for English Language Learners (ELL) (Elizalde-Utnick 2008). Due to these recent educational initiatives, this research study will focus on how the assessment of ELL impacts their identification and placement in gifted and talented programs. For this Honors thesis, there are two research questions explored in depth. Overall, what assessment strategies, procedures and instruments are more effective in identifying ELL for gifted programs? Once identified for these programs, what instructional and assessment strategies appear to be more effective? This is a current topic because most studies have focused on the overrepresentation of ELL as having learning disabilities. However, several researchers have considered the underrepresentation of ELL in gifted and talented programs and how these same students can be successful in gifted and talented programs. The presentation will include research and data related to historical perspectives, the magnitude of the need for improved assessment and identification, current strategies and their effectiveness, misunderstandings about ELL and gifted and talented programs and directions for future research and its importance.

advisors

ADVISOR	DEPARTMENT	ADVISOR	DEPARTMENT
Arnold, Jacqueline M., Ph.D.	Teacher Education	Kavanaugh, Jeffrey L., Ph.D.	Biology
Barrios, Joaquin A., Ph.D., DPT	Physical Therapy	Kearns, Robert J., Ph.D.	Biology
Bartley, Karen A., Ph.D.	History	Kirschman, Keri J. Brown, Ph.D.	Psychology
Bauer, Jack J., Ph.D.	Psychology	Kunz, Benjamin R., Ph.D.	Psychology
Benin, Vladimir A., Ph.D.	Chemistry	Letterio, John, M.D.	Pediatric Oncology / Hematology Case Western Reserve University
Berry, Melissa A., Ph.D.	Psychology	Lopper, Matthew E., Ph.D.	Chemistry
Bigelow, Kimberly E., Ph.D.	Mechanical and Aerospace Engineering	Majka, Theo J., Ph.D.	Sociology, Anthropology and Social Work
Borbonus, Dorian, Ph.D.	History	Masthay, Mark B., Ph.D.	Chemistry
Carrillo, Albino, MFA	English	McCombe, John P., Ph.D.	English
Collier, Trevor C., Ph.D.	Economics and Finance	Merithew, Caroline W., Ph.D.	History
Crecelius, Anne R., Ph.D.	Health and Sport Science	Nielsen, Mark G., Ph.D.	Biology
Crum, Roger, J., Ph.D.	Art and Design	O'Mara, Erin M., Ph.D.	Psychology
Crutcher, Robert J., Ph.D.	Psychology	Ordonez, Raul E., Ph.D.	Electrical and Computer Engineering
Daprano, Corinne M., Ph.D.	Health and Sport Science	Pautz, Michelle C., Ph.D.	Political Science
Dasgupta, Simanti, Ph.D.	Sociology, Anthropology and Social Work	Pici, Joseph R., M.A.	English
Davis, Susan T., Ph.D.	Psychology	Pinnell, Margaret F., Ph.D.	Mechanical and Aerospace Engineering
Douglass, Scott A., Ph.D.	United States Air Force	Richards, Stephen B., Ed.D.	Teacher Education
Ensalaco, Mark, Ph.D.	Political Science	Roy, Haimanti, Ph.D.	History
Eustace, Deogratias, Ph.D., PE., PTOE	Civil and Environmental Engineering	Rush, Tobias W., D.A.	Music
Goldman, Daniel, Ph.D.	Geology	Sableski, Mary-Kate, Ph.D.	Teacher Education
Han, Jee-Hee, Ph.D.	Communication	Santamarina, Juan C., Ph.D.	History
Hansen, Karolyn M., Ph.D.	Biology	Singh, Amit, Ph.D.	Biology
Haritashya, Umesh K., Ph.D.	Geology	Swavey, Shawn M., Ph.D.	Chemistry
Higgins, Aparna W., Ph.D.	Mathematics	Taha, Tarek M., Ph.D.	Electrical and Computer Engineering
Hoelscher, Colleen E., M.A., MLS	University of Dayton Libraries	Titlebaum, Peter J., Ed.D.	Health and Sport Science
Hudson, Natalie F., Ph.D.	Political Science	Tsonis, Panagiotis A., Ph.D.	Biology
Jackson, Kurt J., Ph.D.	Physical Therapy	Whisnant, Rebecca S., Ph.D.	Philosophy
Kango-Singh, Madhuri, Ph.D.	Biology	Williams, Thomas M., Ph.D.	Biology
Katsuyama, Ronald M., Ph.D.	Psychology	Zhang, Ting J., Ph.D.	Economics and Finance

presenters

PRESENTER	ROOM AND SESSION TIME	PRESENTER	ROOM AND SESSION TIME
Alakkad, Sara R.	Room 310, 3:40 p.m.	List, Mary P.	Room 312, 2:20 p.m.
Arnold, Katelyn M.	Room 312, 4:20 p.m.	Liu, Yi	Room 311, 2:20 p.m.
Auletto, Kathryn C.	Room 222, 4:20 p.m.	Lundy, Nathaniel M.	Room 312, 3:20 p.m.
Bates, Brian D.	Room 211, 2:40 p.m.	Maffett, Anissa J.	Room 311, 4:20 p.m.
Beebe, Jessica L.	Room 310, 2:20 p.m.	Marshall, Ashley Ann	Room 311, 3:20 p.m.
Bondi, Krista E.	Room 211, 3:40 p.m.	McDermott, Madeline R.	Room 207, 1:40 p.m.
Borkey, Nicholas C.	Room 310, 2:00 p.m.	McNulty, Nolan J.	Room 311, 1:40 p.m.
Bugada, Luke F.	Room 312, 4:00 p.m.	Miller, Kelly F.	Room 207, 3:00 p.m.
Caldera, Christine E.	Room 211, 1:40 p.m.	Miranda, Giuseppe G.	Room 311, 2:00 p.m.
Carey, Allison K.	Room 207, 3:40 p.m.	Morrow, Christopher S.	Room 312, 3:40 p.m.
Draves, Morgan E.	Room 211, 2:00 p.m.	Oehlman, Kathryn C.	Room 331, 3:40 p.m.
Dubay, Sarah E.	Room 312, 4:40 p.m.	Ohradzansky, Michael T.	Room 312, 3:00 p.m.
Edmonds, Mark J.	Room 311, 4:00 p.m.	O'Mera, Bridget K.	Room 311, 4:40 p.m.
Farley, Kevin X.	Room 331, 3:00 p.m.	Pair, Morgan E.	Room 311, 2:40 p.m.
Fesenmeier, Samuel J.	Room 331, 4:00 p.m.	Pedersen, Maya V.	Room 311, 1:00 p.m.
Feskanin, Hilary F.	Room 310, 1:40 p.m.	Price, Nicole E.	Room 211, 4:40 p.m.
Fisher, Annemarie G.	Room 222, 4:00 p.m.	Roebke, Austin J.	Room 331, 2:20 p.m.
Flaherty, Megan K.	Room 311, 3:00 p.m.	Roeske, Maxwell J.	Room 331, 1:00 p.m.
Garbin, Matthew J.	Room 222, 1:00 p.m.	Sales, Rachel K.	Room 312, 1:40 p.m.
Hess, Tanner G.	Room 312, 2:00 p.m.	Schaefer, Timothy E.	Room 211, 4:20 p.m.
Irwin, Madison N.	Room 331, 2:40 p.m.	Schilling, Kathryn M.	Room 311, 1:20 p.m.
Kelly, Clare A.	Room 331, 3:20 p.m.	Seitz, Jordan T.	Room 211, 4:00 p.m.
Ker, Robin E.	Room 222, 3:20 p.m.	Sonneborn, Claire A.	Room 311, 3:40 p.m.
Kingston, Taylor V.	Room 207, 4:00 p.m.	Spahr, Vincent E.	Room 222, 3:00 p.m.
Kloke, Danielle D.	Room 222, 1:40 p.m.	Stalder, Sarah A.	Room 331, 4:20 p.m.
Kloock, Colin M.	Room 310, 3:20 p.m.	Urban, Jessica L.	Room 207, 1:20 p.m.
Kocoloski, Genevieve M.	Room 222, 2:00 p.m.	VanHook, Chelsea M.	Room 211, 1:20 p.m.
Konys, Claire C.	Room 331, 1:20 p.m.	Weber, Riley C.	Room 222, 4:40 p.m.
Krisby, Ryan M.	Room 207, 3:20 p.m.	Wilhelm, Elizabeth M.	Room 211, 3:20 p.m.
Kwon, Hailey J.	Room 331, 1:40 p.m.	Willard, Mary A.	Room 222, 3:40 p.m.
Land, Kimberly M.	Room 211, 2:20 p.m.	Witzeman, Matthew J.	Room 310, 4:00 p.m.
Li, Zixi	Room 211, 3:00 p.m.	Zhang, Wujian	Room 331, 2:00 p.m.



email: honorsinfo@udayton.edu / website: www.udayton.edu/honors