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.
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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 awardee for 2013-14 is Laura K. Huber

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 2013 cohort are Jessica L. Beebe, Timothy L. Cutler, Madison N. Irwin, Taylor V. Kingston, Danielle D. Kloke, Ryan M. Krisby, Hailey J. Kwon, Kathryn C. Oehlman, Peter J. Ogonen, Kathryn L. Schwaeble and Mary A. Willard
Sex-Dependent Electrophysiological Response of *Lucilia sericata* to Concentration Gradient of Indole

*Lucilia sericata*, a species of blowfly, is one of the first species to arrive on a dead body and is therefore forensically important in estimating time of death. Indole is a compound that is experimentally proven to attract *L. sericata*. In high concentrations, indole has a strong fecal odor but in low concentrations, it has a flowery odor and is often used in perfumes. Due to differing dietary needs, males and females respond to volatile organic compounds differently. My goal is to determine if the concentration of indole affects level of attraction in males, non-gravid females and gravid females. Attraction is quantified using the electroantennogram, a machine that measures electric impulses in the given specimen. Establishing levels of attraction across a concentration gradient of indole provides information that can help us hypothesize what attracts the flies to the body and when, leading to a more accurate estimation for time of death.

Dayton's Food System: Current Access to Food in Dayton and Future Possibilities

Downtown Dayton and its surrounding areas are considered to be a food desert by the USDA, which means there is limited access to healthy foods within a 0.5 mile radius. The implications of this include driving further for groceries or turning to convenience stores for highly processed foods. This has created health concerns for the residents of Dayton, including obesity and diabetes. The purpose of this study was to understand the food system issues, their complexity and implications, and to understand what groups are currently doing to support the food system, and determine what is necessary to push the issues forward and make positive progress. The research was done through interviews with the various people, groups, and organizations involved in the food system. This research will provide suggestions for further actions with the goal of bringing healthy, local foods to all those in the area.
Andrew M. Steffensmeier 1:20 p.m., Room 311
PreMedicine
Amit Singh, Ph.D., Thesis Advisor
Biology Department

Novel Neuroprotective Function of Apical-Basal Polarity Gene Crumbs in Amyloid Beta 42 (α42) Mediated Neurodegeneration

Alzheimer’s disease (AD) is a progressive neurodegenerative disorder of the central and peripheral nervous system found primarily among the elderly. AD is characterized by cognitive dysfunction of learning and memory due to selective atrophy of the hippocampus and the frontal cerebral cortex. Generation of amyloid-beta plaques in the brain is one of the causes for cytotoxicity observed in AD. There is no cure available for AD, which is the sixth largest killer disease in U.S. The fruit fly, *Drosophila melanogaster*, serves as a genetically tractable model with an array of genetic techniques and tools. *Drosophila* eye serves as an excellent tool to model neurodegenerative diseases. I use the *Drosophila melanogaster* eye model to perform a chemical drug screen as well as a genetic screen, looking for modifiers of the Amyloid-beta phenotype. A novel function of the apical-basal polarity gene, Crumbs, has been identified to affect the AD phenotype.

Lauren E. Banfield 1:20 p.m., Room 222
Visual Communication Design
John V. Clarke, M.F.A., Thesis Advisor
Department of Visual Arts
Kathy Kargl, Thesis Advisor
Department of Visual Arts

Creating Identities: Semiotic Theory as Applied to Visual Messages

Brand identity is about recognition, visibility, and expressed quality in a world where there are endless options. At the heart of branding is the perception of meaning and how that meaning is understood. Focus has been placed on the development and implementation of comprehensive brand identities, through work with multiple clients with distinct perspectives. The components contained within the brands’ systems have been determined by the needs of each organization, and have included: logos, business cards, letterhead, marketing or promotional materials, poster designs, social media elements, and invitations to events. Exploration and analysis of the development of the brand strategy for a recent local company will be discussed as a case study, including both perspective from the client and a design analysis of the solution. These different standpoints will facilitate comparison, allowing a broad and diverse view of brand identity.

Chin Yi Chen 1:20 p.m., Room 207
Anthropology and International Studies
Karen Abney Korn, Ph.D., Thesis Advisor
Sociology, Anthropology and Social Work Department

Examining Acculturative Stressors of the International Student: Following Study Abroad Students in South Korea and Morocco

International students, particularly students studying abroad for a limited period of time, face certain challenges in entering and adjusting to a new cultural environment. This research focuses on different barriers to adjustment including language, differences in nonverbal communication, discrimination and academic pressure. By comparing and contrasting the perspectives of various students with the researcher’s experience, this research provides insight into the lived experience of international students and the researcher through on-site fieldwork and interviews conducted over a year on university campuses in South Korea and Morocco. It also discusses the results of the undertaken research and offers suggestions for resolving or minimizing these acculturative challenges.
is that foreign aid affects the economic, social, and governmental structure in a country, foreign aid and political stability in Jordan between 1991 and today. The basic argument amounts of foreign aid Jordan has received from the US. Using the Gulf War Crisis in 1991 it is hard to judge the economic or social stability of Jordan without recognizing the large Jordan maintained relative economic stability where others have failed? I have found that have held power for decades. Jordan stands as the only obvious exception. How has Usually, the citizens of these counties were revolting against the authoritarian regimes North Africa region suffered from extreme political, social, and economical instability. After the fall out of the Arab Spring in 2010, most of the countries in the Middle East and North Africa region suffered from extreme political, social, and economical instability. Usually, the citizens of these counties were revolting against the authoritarian regimes that have held power for decades. Jordan stands as the only obvious exception. How has Jordan maintained relative economic stability where others have failed? I have found that it is hard to judge the economic or social stability of Jordan without recognizing the large amount of foreign aid Jordan has received from the US. Using the Gulf War Crisis in 1991 as a starting point, this thesis asks what the relationship exist between developmental US foreign aid and political stability in Jordan between 1991 and today. The basic argument is that foreign aid affects the economic, social, and governmental structure in a country, which decreases unrest in the population and increases political stability. This thesis looks at the relationship between these factors and their influence on each other. I will also look at future proposals of improving the Jordanian economic and social environment.
in newts could potentially be used in regenerating tissues in humans. Studying the Wnt and ventral iris during regeneration. Understanding the mechanism of lens regeneration examine genes of the Wnt Signalling pathway in order to discover their roles in the dorsal in the ventral iris, which serves as the control. Previous studies have concluded that the newt regenerates the lens after complete removal. Natural regeneration does not occur amphibians have the ability to regenerate a variety of organs. Among them, the red spotted wet regenerates the lens after complete removal. Natural regeneration does not occur in the ventral iris, which serves as the control. Previous studies have concluded that the ventral iris during regeneration. Understanding the mechanism of lens regeneration in newts could potentially be used in regenerating tissues in humans. Studying the Wnt signaling pathway could give rise to a regenerative medicine approach.
The Acute Effects of Aerobic and Resistance Exercise on Cardiovascular Function and Arterial Stiffness

This study investigated how long the cardiovascular effects of aerobic and resistance exercise propagate after completion of exercise in healthy males. Cardiovascular function was closely monitored to observe changes in arterial stiffness before exercise and during recovery. Parameters used to monitor vascular function include central and peripheral blood pressure, heart rate, velocity of blood flow, and blood biomarkers of vascular function. The study required participants to complete an aerobic, resistance and control exposure. Measures of the parameters were taken at rest and at specified intervals after completion of each protocol. These measurements were analyzed to determine the acute effects of each exposure on the blood vessels' functioning, how long these effects last and how the vascular responses differed between the exercise modalities. This experiment served as a pilot study in developing exercise protocol for patients with Peripheral Artery Disease (PAD).

Impact of Amur Honeysuckle (Lonicera maackii) Leachate on Culex pipiens Life History Attributes

Mosquitoes are a nuisance to human beings and also vector some of the most deadly pathogens on Earth. One important mosquito in Ohio is Culex pipiens which is found in many urban areas and is a known vector of West Nile Virus. MOSQUITOS COULD BE INFLUENCED BY THE HIGHLY INVASIVE SHRUB, AMUR HONEYSUCKLE (Lonicera maackii). L. maackii is quickly outcompeting native plants across the Eastern and Mid-Western United States. L. maackii is known to leach chemicals and nutrients into aquatic habitats. I hypothesize that this leaching may affect mosquito populations. During my thesis, I investigated the effects of L. maackii leachate on several life history traits of C. pipiens larvae: pupation rate, emergence, growth rates, and survivorship. Leachates were made from naturally senesced leaves of L. maackii, sycamore (Platanus occidentalis), and sugar maple (Acer saccharum) collected in the Fall of 2012 and honeysuckle flowers collected in the Spring of 2013.

The Role of Gender in Alison Brysk's Global Good Samaritan Theory

How do gender equity practices, laws, and norms impact a nation's foreign policy? In a comprehensive study of middle power states, political scientist and global governance expert Alison Brysk examined what made a state invest time, treasure, and human capital into a foreign policy agenda focused on human rights. However, in this analysis, Brysk does not fully take into account the status of women in regards to Global Good Samaritan states' control over reproductive rights, productive rights, and national security policy. By examining the status of women within these countries, this study seeks to better ascertain how domestic policy, international policy, and global governance practices regarding gender equity influence a state's likelihood of becoming a moral superpower and vehement supporter of human rights within the international system.

Premium Food & Beverage Trends in Sport Venues

Industry venue professionals shared premium food and beverage trends and best practices. Interviews covered 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 discovered a push to include technology in the food and beverage experience, either to simplify the ordering process or to market items offered. There is also a movement to create additional, all-inclusive tickets which will streamline ordering procedures. Ordering has taken a new direction with an emphasis on menus including local brands and home grown products. Industry professionals must find a balance among consumer preferences, corporate needs, and local and national sponsors. The bottom line and the key for success is to provide quality service while meeting the needs of today corporate world with a premium experience.
Genomes, the system developed here can be applied to other organisms, including humans. Regulatory sequences. Because promoters and enhancers are general components of animal genomes. In Drosophila melanogaster, the fruit fly species Drosophila which can be used to map functional gene elements. A transgenic system to track the communication between enhancers and promoters in these elements is often substantial in animal genomes. My thesis research developed by an understanding that the non-coding genome contains many functional elements to be “junk DNA” that lacked functional elements. Recently, this assumption was replaced as recognized as a functional protein coding sequence. The remaining 98% was considered to pass through a refinery to be processed into usable products such as gasoline, diesel, and aviation fuel. The initial separation of crude oil into different fractions that become these products takes place in a special distillation column known as a fractionation tower. The goal of this thesis was to evaluate the validity of several correlations for estimating the heat transfer coefficient for a specific section within a fractionation tower known as a pumparound. The correlations were evaluated by comparing the predicted performance of atmospheric and vacuum fractionation towers at 9 refineries around the world to their actual performance based on operating data. This presentation will cover not only my work on this thesis, but also an overview of how a refinery turns crude oil into useable products such as gasoline.

Biofilms are slimy substances made up of bacteria that attach to surfaces. They can be found in natural settings (rocks in streams) and man-made environments (hospital catheters, pipelines). Biofilms are also found in aviation fuel tanks, causing physical issues such as clogging in fuel lines and changing the chemical makeup of the fuel via bacterial metabolism. Bacterial viruses, known as phage, show potential for reducing biofilms through phage therapy. The goal is to find a phage or combination of phage with a broad host range that would be most effective in reducing the biofilms of bacteria isolated from fuel tanks. Known phages UT1, SN-T, and PEV2 will be tested against these biofilms, both individually and in combination. Biofilms will be assayed for biomass (crystal violet staining) and colony-forming units (CFU) in the presence of phage or combination of phages to determine the amount of biofilm reduction.

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Photoreactions of a Water-Soluble Poly-Isoquinolpyrrole and Plasmid DNA within the Photodynamic Therapy Window

Photodynamic Therapy (PDT) is a treatment method for a variety of ailments, including different cancers. It involves light activation of a molecule (photosensitizer) which then reacts with molecular oxygen to destroy tumor cells. Porphyrins are commonly used as photosensitizers due to their light absorption properties and their ability to concentrate in tumor cells but not healthy cells. Unfortunately, porphyrins suffer from poor excitation when irradiated with visible light in the photodynamic therapy window (600-800nm). The photodynamic window is optimal due to the depth of penetration the light reaches and the lack of absorption from naturally occurring compounds in the body. This project involves the synthesis and characterization of a new type of photosensitizer with the goal of creating new molecules that are activated by low energy light.

Purification and Biochemical Characterization of a Cellulolytic Glycoside Hydrolase from *Caldicellulosiruptor saccharolyticus*

In response to the current global energy crisis, biofuels have become a viable renewable energy solution and require a carbohydrate source to begin their production. One such carbohydrate source option is biomass, which is comprised of complex sugars that can be broken down into simple sugars and then fermented for the production of bioethanol. The bacterium called *Caldicellulosiruptor saccharolyticus* contains many glycoside hydrolase enzymes that have the potential for metabolizing the complex sugars in several carbohydrate sources, including those in biomass. This project is focused on the cloning of the Csac_2410 gene from *C. saccharolyticus*, expression of the gene as a protein, purification of the protein, and biochemical characterization of the protein. The biochemical characterization determines the substrate specificity, pH optima and temperature optima of Csac_2410, and the results are used to determine the effectiveness of Csac_2410 in metabolizing complex sugars for the upstream processing of biofuels.

Identifying the DNA Sequence Requirements for a Synergistic Interaction Between Two Cis-Regulatory Elements

My thesis research studies the genetic material that is the blueprint to make animal life. In animals, a key type of genetic material is sequences collectively referred to as cis-regulatory elements (CREs). These sequences control the expression of genes; more specifically they instruct when to turn “ON” or “OFF” the production of a gene's functional product. My research investigates the interaction between the two CREs, the Anterior Element and Dimorphic Element of the fruit fly species *Drosophila melanogaster*. These two CREs act synergistically to produce a pattern of expression for the bab1 and bab2 genes that differs between male and female flies. As synergistic CRE interactions have seldom been reported, my research has sought to identify the necessary sequences for this interaction. Learning more about CRE functions in fruit flies will facilitate a better understanding as to how CREs function in our own genetic material.

Airships, Automatons, and Amazing Things: An Examination of the Hero's Journey through Creative Prose

That cretin of a head librarian Geoffrey made a huge mistake humiliating Darren in front of the entire staff. Darren's only fifteen, but he got his hands on some magic. He just wishes the magic came with a few disclaimers:

1. May spontaneously ignite gaslights
2. Ensure all nearby friends are properly secured
3. Possession by a powerful demon will occur, handle with care

The demon is a particular problem, especially when Darren's plan for revenge backfires and he loses control over the magic, landing one of the other apprentices in the infirmary. Unless Darren finds a way to tame the demon, it'll slowly consume him from the inside out.

Having the demon inside him also makes Darren one of the most powerful magicians in Balnibarbi. And according to the laws of magic, anyone who wants the demon's power just has to carve up Darren's heart.

Crossing paths with a power-hungry magician spells even more trouble for Darren and he learns magicians will burn and kill everything in their path to get what they want.

And what this magician wants is Darren's magic.

*THE SEAL OF SOLOMON* is a young adult fantasy with steampunk elements that explores Joseph Campbell's Hero's Journey.
Emerging evidence suggests organ growth is regulated by cell-to-cell communication among several signaling pathways, including Hippo. Diminished Hippo signaling leads to tissue overgrowth, and is detected in several human cancers including liver and colorectal.
Determining the Transcription Factor Genes Populating a Fruit Fly Pigmentation Gene Network and Their Regulatory Connections

Morphological traits for organism result from the concerted action of numerous genes that are interconnected into a gene network at the level of transcriptional regulation. In each network, transcription factors control the spatial, temporal, and even sex-specific patterns of gene transcription. To better understand how a gene network operates during development, I investigated the network controlling a male-specific pattern of *Drosophila melanogaster* abdomen pigmentation. Using RNA interference, I reduced the expression of 550 transcription factor genes to identify those needed for normal pigmentation by the occurrence of aberrant pigmentation patterns. From this, I identified 28 genes, which include several that are known to play major roles in establishing animal body plans and that regulate chromatin structure. With this new wealth of known network genes and the diversity of pigmentation patterns among fruit fly species, my thesis supports future studies into the gene network basis for trait development and evolution.

Resettled: A Portrait of Bhutanese Refugees in Dayton, Ohio

Over 75 Bhutanese refugees have been resettled in the Dayton area since 2010. This research examines how this specific refugee population has adapted to life in Dayton. This was done through interviews with people who work directly with Bhutanese refugees and an intensive case study with one extended Bhutanese family living in Dayton. The findings show three main barriers to integration. These include difficulty finding adequate employment, poor English language acquisition, and religion as both an internal community builder and an isolating factor. The goal is for the study to be utilized by the city of Dayton to improve refugee services.

Discrimination Against Disabled Persons in Malawi and the United States: A Comparative Study

In Malawi, Africa and the United States many disabled individuals experience hardships that are more severe than the general public. With regards to education, there is a lower school attendance rate among disabled individuals in each country. With regards to employment, both disabled Malawians and Americans experience lower employment rates and lower annual incomes. This study aimed to discern what factors contributed to these educational and employment deficits in both countries. Possible factors for the deficit may include a discriminatory attitude, a lack of resources available for accessibility, or the severity of the physical or cognitive limitation. A survey was administered at the University of Dayton and at the University of Livingstonia in Malawi aiming to discover if any subtle biases were projected unfavorably upon individuals pictured in wheelchairs. The survey also sought to evaluate whether ample resources were perceived to be available to disabled individuals in each country.
**Exploring Data-Driven Electricity Feedback on Energy Conservation Behavior in the University of Dayton Student Neighborhood**

In general, homeowners do not have a concrete idea of how much energy their houses are using at any given moment. This energy “invisibility” is thought to be a barrier toward people adopting more sustainable behaviors. This study involves installing energy monitors in houses in the University of Dayton student neighborhood to analyze two important questions: whether the monitors teach students about the relationship between their activities and energy consumption, and whether the monitors influence students to adjust their household behaviors. Ideally, conclusions will be drawn from quantitative data collected from the monitors and the university’s energy provider as well as from qualitative data acquired through the distribution of questionnaires. The results could have direct policy implications for the university, such as informing whether it would be worth investing in energy monitors for all student neighborhood properties.

**Madison N. Irwin**

3:20 p.m., Room 310

Biology

**Drosophila Eye Model to Understand the Role of Signaling Pathways in Aβ42 Mediated Neurodegeneration**

Alzheimer’s Disease (AD), a progressive neurodegenerative disorder without a cure, is characterized by accumulation of Aβ42 peptides, which are toxic and result in neurodegeneration. We employ a *Drosophila* eye model to misexpress the human Aβ42 protein which results in neurodegeneration due to the activation of a highly conserved c-Jun amino-terminal (NH2) kinase (JNK) signaling pathway. A highly conserved Hippo signaling pathway has been shown to regulate growth and cell death to regulate organ size. However, its function in Aβ42 mediated neurodegeneration is yet to be studied. Our studies show that blocking Hippo pathway activity can rescue the Aβ42 neurodegenerative phenotype. Furthermore, when levels of JNK pathway members are modulated, the Hippo pathway is affected. Our data suggests that Aβ42 mediated neurodegeneration involves activation of Hippo signaling by the JNK signaling pathway. We have determined the epistatic relationships between the two pathways to generate mechanistic insights into Aβ42 mediated neurodegeneration.

**Alexandria M. Van Loon**

3:20 p.m., Room 207

International Studies and Spanish

**Linguistic Factors Affecting the Socioeconomic Status of Hispanic Immigrants in Dayton, Ohio**

Using a sociolinguistic methodology, based on surveys and interviews, I will analyze how the social status of Dayton’s Spanish-speaking immigrants correlates with their levels of English. My research will benefit the Dayton Hispanic community in that it will identify the dominant linguistic factors that contribute to the definition of their social status. This information will empower the Hispanics with the knowledge of what hinders them linguistically as well as offer the community tools to better integrate them, which is the overall goal of the recently adopted Welcome Dayton plan — an effort to inspire immigrants to invest and remain in the indebted city in hopes their efforts would augment the economy.

**The Disney Evolution: Princesses as Positive Role Models for Girls**

The Disney Princess films are some of the most popular in the world as they have been translated into several different languages with fans sprawling across the globe. The Disney Entertainment Corporation has strategically reached families worldwide and, as a result, have had an impact on children in most countries. Because of their iconic popularity, these works have been discussed and analyzed in great detail by many scholars. Many have criticized the films for their seemingly sexist and oppressive gender messages and find fault in having the princesses serve as role models for young girls; they argue the oppressive characteristics and ideas that are presented in the popular Disney Films. They see these works as roadblocks to gender equality and advocate for awareness of their stance. However, when one closely examines the works and notes the characteristics of the women in relation to the progressive female of the time they can clearly see the value in these films. The interactions between the female protagonists and the animals in the stories showcase the princesses’ positive characteristics present and highlight the ways in which these individuals may be seen as reputable women who set a good example for young girls. In fact, one may argue that these women are model citizens of their respective periods who advocate for equality on their own spectrum while promoting healthy, functional relationships and pursuing happiness.

**Alexandria Lueke**

3:20 p.m., Room 222

English

**The Disney Evolution: Princesses as Positive Role Models for Girls**

The Disney Entertainment Corporation has strategically reached families worldwide and, as a result, have had an impact on children in most countries. Because of their iconic popularity, these works have been discussed and analyzed in great detail by many scholars. Many have criticized the films for their seemingly sexist and oppressive gender messages and find fault in having the princesses serve as role models for young girls; they argue the oppressive characteristics and ideas that are presented in the popular Disney Films. They see these works as roadblocks to gender equality and advocate for awareness of their stance. However, when one closely examines the works and notes the characteristics of the women in relation to the progressive female of the time they can clearly see the value in these films. The interactions between the female protagonists and the animals in the stories showcase the princesses’ positive characteristics present and highlight the ways in which these individuals may be seen as reputable women who set a good example for young girls. In fact, one may argue that these women are model citizens of their respective periods who advocate for equality on their own spectrum while promoting healthy, functional relationships and pursuing happiness.
The bacterial species Deinococcus radiodurans is able to survive extreme levels of DNA damage with no detriment to its health. My research focused on repair of damaged DNA. The bacteria

A new naphthylbiliverdin compound has been synthesized which offers intense absorption with the photodynamic therapy window (600 nm – 850 nm). The compound has been characterized by proton NMR, high resolution electrospray mass spectrometry, elemental analysis, and UV/vis spectroscopy. Coordination of four ruthenium(II) polypyridyl complexes was accomplished by standard procedures. The new tetra-ruthenated naphthyl-

Schools today are challenged to meet the mental health concerns of students due to an emphasis on academic testing and a lack of communication within schools to identify and treat the needs of the students. The needs of the student travel beyond the classroom into the non-academic barriers to learning. The University of Dayton's Urban Child Development Resource Center (UCDRC), works in five local schools in the Dayton area and strives to help students cope with these non-academic barriers to learning. This study focuses on three of the Seven Themes of Catholic Social Teaching as stated by the United States Conference of Catholic Bishops: Call to Family, Community, and Participation; Option for the Poor and Venerable; Life and Dignity of the Human Person; and how UCDRC implements these three themes into its program.

My research focused on repair of damaged DNA. The bacteria Deinococcus radiodurans (D. rad) is able to survive extreme levels of DNA damage with no detriment to its health because it is very efficient at repairing damaged DNA. In replicating (copying) bacterial DNA, damaged DNA will cause the replication to stop. This requires that the DNA replication be restarted in order for the replication to be completed and the bacteria to avoid cell death. In most bacteria the proteins that function to restart DNA replication at points of DNA damage are fairly well conserved from bacteria to bacteria; however the D. rad bacteria lacks many of those proteins, and some of the proteins in D. rad have potentially significant structural differences. I investigated the interactions between several of these proteins in D. rad bacteria, resulting in a clearer understanding of how these proteins interact.
Classifying the Functionality of Primosome Protein A in Deinococcus radiodurans

Deinococcus radiodurans (D. rad) is an extremophile bacterium with the capacity to survive tremendous exposure to DNA damaging factors including heat, dehydration, and radiation. D. rad, like all organisms, has developed a way to fix DNA damage by using a series of damage correcting proteins. While many organisms share similar damage correcting proteins, the role of the sub-class called primosome proteins in the D. rad bacterium is unknown. This research isolated the Primosome A (PriA) protein and conducted experiments to classify D. rad PriA function. The ability of D. rad PriA to bind DNA, bind to Adenosine Triphosphate (ATP), and hydrolyze ATP was investigated. The three abilities are hallmark characteristics of helicase proteins in standard bacteria models, which unwind double strands of connected DNA. D. rad PriA showed ability to bind to DNA, but did not bind to or hydrolyze ATP. The protein was classified as a fossilized helicase, the results indicating the evolution of D. rad over time has favored the loss of PriA helicase function.

Evaluation of Teacher Beliefs and Attitudes in High School Education

Teachers are powerful agents of socialization to the students whom they instruct. Extensive research has been done on the impact of certain teaching styles, methods and educational perspectives. However, lacking in many of these studies is the investigation of the relationship between a teacher's educational beliefs and his or her personal beliefs, behaviors and his or her ethical leanings. An evaluation of this relationship was undertaken through the use of survey research conducted in the Montgomery County Public School System of Ohio with full-time high school instructors. Schools from Montgomery County Public Schools were selected using simple random sampling techniques. This survey ascertains how a teacher views the classroom setting and students, basic demographic information, educational background of the instructor, and behavioral questions that approximate ethical tendencies. Frequency analysis of responses indicates high occurrences of a feminist care ethic and of a deontological ethic in teacher perceptions. Analysis also reveals that respondents view their job as an educator is to be a facilitator to actively engaged students who possess a strong work ethic.

Synthesis and Characterization of a Mono-metallic Lanthanide Compound

A single metallic compound was created using a lanthanide metal, bridging ligands, and antenna ligands. Then, the compound’s fluorescence, as well as temperature dependent fluorescence, was looked at to determine the effect temperature has on the compound. The compounds were also made into crystals to determine the structure.

Transit as an Alternative Mode of Transportation: A Case Study of its Usage, Availability, Patterns and Value for Non-Commuter Trips

The thesis is a case study of three Dayton area malls and the Dayton RTA bus system that travels around them. The study looks at the location of the bus stops closest to the mall as well as the routes that make stops in these areas and the layout of each of the malls. Based on observed traffic and bus ridership patterns, design recommendations for each mall as well as the RTA routes in the area were made based on the principles of compact design and transit-oriented development. The goal of these recommendations is to increase transit usage for shopping trips.
The Use of a Compact Elliptical Trainer in an Individual with Chronic Stroke: A Case Study

Over 795,000 people in the United States suffer a stroke each year. As a result, stroke is one of the leading causes of long-term disability. Individuals with chronic stroke typically start their rehabilitation in physical and occupational therapy settings. In formal therapy settings, equipment modifications such as handrails, benches for transfers, and extra steps leading to pieces of equipment allow better access and increase safety. However, adapting equipment for home use to promote long-term fitness is more difficult and less common. Therefore, the purpose of this pilot investigation is to evaluate the use of a new commercially available compact elliptical trainer on ankle motion and muscle activity. One male with chronic stroke was tested. The subject used the compact elliptical trainer without resistance under six different conditions for 30 seconds each. Measures include surface electromyography (EMG), 3D motion analysis for joint range of motion, and the NASA Task Load Index.

Improving Female Science Scores Through STEM Curriculum

Currently in education there is a stress on career readiness. Specifically in science education, teachers are expected to educate their students not only on science concepts but also careers that involve Science, Technology, Engineering, and Mathematics (STEM). According to the United States Department of Education (2013), the United States is falling behind on mathematics and science education, ranking 25th and 17th in the world. These numbers must increase in order to prepare students for success in STEM fields as they graduate. One approach teachers use to ensure that students are well versed in the STEM fields is STEM education. In STEM education, students are taught using a method that focuses on real world application and engineering. This study focuses specifically on how middle-school females are affected by STEM education. Female success in science under the STEM method of teaching has been observed through a review of literature and a survey.

Design and Characterization of Photoresponsive Supramolecular Aggregates

A supramolecular assembly is a complex of molecules held together by noncovalent interactions. The process by which supramolecular assemblies are formed is called “molecular self-assembly”, during which the molecules spontaneously aggregate in a specific manner, acquiring new properties. Incorporating photoisomerizable molecules into supramolecular assemblies offers considerable opportunities in developing new smart materials. Using UV-Vis and CD spectroscopy, we explored the propensity for a dicarboxylic acid derivatized azobenzene photoswitch (ADA) to form supramolecular aggregates and investigated the photochemical behavior of the system. ADA was shown to undergo cis-trans isomerization when irradiated in aqueous solution with visible and UV light. Upon reduction of the pH, the trans form of ADA aggregates in a chiral fashion. Homo-aggregation of the trans form of ADA was shown to prevent photoisomerization to the cis form. The feasibility of forming supramolecular heteroaggregates between ADA and other molecules, including water soluble porphyrins and poly (glutamic acid), was explored.

Preparing Pre-Service Teachers to Work with English Language Learners

English Language Learners (ELLs) can be mis-identified as students with special needs. When they may be struggling with their language delay. To be identified as needing special education services, these students undergo assessments; however, these are created for students who speak English, putting ELLs at a further disadvantage. If placed in a special education program, the student rarely receives the language instruction needed, and they continue to fall further behind in their education. To prevent this problem, pre-service teachers need to gain experience with ELLs so that they can give them the support they need. Not all pre-service teachers have ELL experience, therefore instructors turn to video case studies that show authentic footage, assessments, and work of an ELL. The goal of this study is to determine the effects of video case studies on pre-service teachers, and what questions were generated as a result of the in class clinical experience.
**Disney’s Adventure in Foreign Direct Investment: A Case Study of Hong Kong Disneyland**

This thesis is a case study of the Walt Disney Company’s foreign direct investment in the Hong Kong Special Administrative Region. There are both costs and benefits associated with this joint venture in which Disney introduced a large service product innovated in the home country (the USA) into a new location (the host market Hong Kong), a special administrative region (SAR) of the People’s Republic of China. To penetrate the Chinese market, Hong Kong Disneyland had to translate the experience to a multilingual audience; but the greater challenge was adapting the product (the Disney experience) to the tastes and preferences of (predominantly) Asian customers. Success was not and is not assured. The very metric — success — has to be evaluated from multiple perspectives: that of the firm, Disney; the home nation, USA; and the host, Hong Kong.

**Population Variation in Fossil Graptolites: A Quantitative Study Based on Single Species Assemblages**

Graptolites were colonial, planktonic organisms that lived in the poorly-circulated Early Paleozoic oceans. Graptolite fossils are often found in black mud rocks and shales, and are commonly well preserved because the low oxygen predators were scarce. Graptolites are hemichordates and include the modern pterobranchiate, Rhabdopleura. Most graptolites (the Graptoloida) were free-swimming zooplankton and their fossils can be found in Early Paleozoic mud rocks worldwide, and are considered to be a significant index fossil for Ordovician and Silurian strata. Index fossils are fossil organisms that are especially good for ordering rock units into a superpositional sequence and making time correlations between units in different locations. Graptolite morphology changed dramatically during their evolutionary history and hence, they are also textbook examples of organisms that exhibit evolutionary trends in the fossil record. The study of graptolites and their evolution is instrumental to the development of the geologic timescale and to our understanding of fossil zooplankton.
Amy N. Timmerman  
English and Political Science  
Michelle C. Pautz, Ph.D., Thesis Advisor  
Daniel R. Birdsong, Ph.D., Thesis Advisor  
Political Science Department

Party Building: Factors to Encourage Third Party Support Amongst 18-24 Year Olds

My thesis will examine the potential political third parties have in gaining popular support that would bring them into equal competition with the Republican and Democratic parties. Third parties have remained on the fringes of our political system for years, never gaining the ultimate political success of winning the presidency. Yet, third parties abound within the American political system, so why have they had so little success or widespread support? This thesis endeavors to determine whether third parties have a pathway to viability in our political climate. Through past examples and a survey of registered 18-24 year old voters I examine the reasons people choose to support or not support third parties. This research begins to help answer the question of why third parties have struggled on the national stage and offers answers to ways they can build organizations that will appeal to the youngest block of voters.

Megan R. Abbate  
English and  
Adolescent to Young Adult Education  
Thomas L. Morgan, Ph.D., Thesis Advisor  
English Department

Developing Social Consciousness through Multicultural Young Adult Literature

In this study, the novels We Were Here and Mexican Whiteboy by Matt de la Pena and The Absolutely True Diary of a Part-Time Indian by Sherman Alexie, works which feature male protagonists struggling to locate their multicultural identities, will be analyzed. This research will legitimize the use of multicultural young adult literature, specifically these three texts, in the classroom, despite the presence of controversial themes. This research will demonstrate the value of these texts due to their potential to foster social consciousness and aid the establishment of identity within a global context. This thesis will demonstrate ways in which young adult literature can promote social change through both recognition of commonalities and respect for differences.

Jamie L. Dell  
Early Childhood Education  
Joni L. Baldwin, Ed.D., Thesis Advisor  
Teacher Education Department

Literacy Instruction in Early Childhood Education: Ohio’s Third Grade Reading Guarantee

This qualitative study’s purpose was to research effective literacy instruction in three separate primary classrooms. Three teachers were observed and interviewed as to how they are delivering best instruction in their respective classrooms. These observations were then compared with Gail Tompkins’ (2011) effective literacy educator statements as well as other best practice techniques. Once all of the data was collected, the primary investigator traced similarities throughout the three teachers and made five new additions to the collection of effective literacy educator statements by Gail Tompkins. Implications of this study include the impending Ohio’s Third Grade Reading Guarantee which is an unfunded mandate for the state of Ohio. It requires a third grade reading level for all students leaving that grade or they face retention. Literacy is a crucial part of life which is why having effective literacy instruction in the early grades is so important.