

**Program and Abstracts**  
**Celebration of**  
**Student Scholarship**



**Showcase of Student Research,  
Scholarship, Creative Work,  
and Performance Arts**

**April 25, 2012**

# Celebration of Student Scholarship

## April 25, 2012

### Program Overview

Adron Doran University Center

Registration, poster and Powerpoint set-up, and continental breakfast	8 – 8:55 a.m.	
Oral Presentations	9 – 12:00 p.m.	301, 302, 312, Riggle, Commonwealth & Eagle Meeting Rooms
Lunch	11:45 a.m. – 12:45 p.m.	Crager Room
A. Frank and Bethel C. Gallaher Memorial Music Performance	12:45 – 1 p.m.	Crager Room
Poster Presentations – Session I (Posters 1-77)	1 – 2:30 p.m.	Crager Room
Poster Presentations – Session II (Posters 1-72)	2:45-4:15 p.m.	Crager Room
Concluding Remarks	4:15 p.m.	Crager Room
Poster removal	4:30 p.m.	

### Welcome Statements.....2

Wayne Andrews, President  
 Karla Hughes, Provost and Vice President for Academic Affairs  
 Bruce Mattingly, Director, Office of Undergraduate Research  
 Robert Albert, Dean, College of Business and Public Affairs  
 Cathy Gunn, Dean, College of Education  
 M. Scott McBride, Dean, Caudill College of Arts, Humanities and Social Sciences  
 Roger McNeil, Dean, College of Science and Technology

### Oral Presentations and Abstracts.....4

### Poster Presentation Abstracts Session I.....25

### Poster Presentation Abstracts Session II.....44

### Recipients of Undergraduate Research Fellowships 2011-12.....65

### Student Index .....69

TABLE OF CONTENTS

I am pleased to welcome you to the Seventh Annual Celebration of Student Scholarship at Morehead State University. During this campus-wide event, the University community will acknowledge the excellent efforts of students in research, scholarship and creative productions. I take great pride that at MSU, scholars teach and empower a diverse population of students to succeed in pursuing their educational goals.



As president of this great University, I firmly believe that scholarship and service go hand in hand with teaching in providing the most effective learning environment. Faculty members who mentor students in research and other creative activities provide a vital spark that challenges and stimulates these creative minds. As a result, our academic programs provide abundant opportunities for students to work side by side with faculty in meaningful research and creative initiatives. This special event provides a unique opportunity for everyone to see the products of these faculty-mentored student projects. The work presented by these students is truly amazing!

As you review the Celebration of Student Scholarship program, you will find an array of undergraduate accomplishments in individual and group research projects, creative efforts, and artistic performances in a variety of academic disciplines. By attending this showcase, you provide support and encouragement to our young scholars and artists.

The vision for our University is to be recognized for our superb teaching and scholarship. Through the efforts of our dedicated faculty, Morehead State University will become a premier "institution of choice" for students who want to engage in the process of discovery and become outstanding citizens in an ever challenging and changing world.

**Dr. Wayne Andrews, President**

I am pleased to be part of this great event in the Celebration of Student Scholarship. While the learning that takes place through structured classroom activities is important, the participation in research and creative activity provides an opportunity for students to transition from learner to scholar. Once an individual has been involved in seeking answers to research questions or in creative expression based on theories and principles, they approach learning from a different perspective.



For many of these students, it has been the opportunity to discover their own abilities in the application of knowledge. And, through the work of the faculty mentor(s), they have been challenged to look beyond the security of their knowledge base to ask "what if" or "why?" This process has awakened the desire for some students to move beyond an undergraduate degree to pursue advanced degrees and opened a new world of discovery to them.

This Celebration is an excellent illustration of the integration of scholarship, teaching and learning. I wish to thank everyone who has been involved in planning and implementing the projects that have contributed to the intellectual and creative development of our students. I congratulate the students who accepted the challenge to engage in the role of student scholar; to stretch their minds and talents; and to become role models for their peers. I hope you enjoy the events that have been planned in Celebration of Student Scholarship.

**Dr. Karla Hughes, Provost and Vice President for Academic Affairs**

W  
E  
L  
C  
O  
M  
E



*“Great universities are noted for the scholarship and creativity of their faculty and students. This Seventh Annual Celebration of Student Scholarship program highlights our commitment to undergraduate research and creativity, and our progress toward the goal of becoming the best public regional university in the South. I offer my hearty congratulations to these student scholars, and my great appreciation to the faculty mentors who go the extra mile to challenge these young scholars outside the formal classroom setting.”*

**Dr. Bruce Mattingly, Director, Office of Undergraduate Research**

*“The Student Research and Creativity Celebration is the capstone event that recognizes the important contributions of faculty and student collaborative research to the overall education of our students at Morehead State University. Our faculty and students alike benefit tremendously from these one-on-one teaching and learning experiences.”*



**Dr. Robert Albert, Dean, College of Business and Public Affairs**



*“This Celebration Week showcases MSU's students - their talents, their enthusiasm, and evidence of their research projects. Through their experiences as undergraduate fellows, these teacher candidates learn the discipline of research and we believe the excitement and professionalism as student researchers infuses the classroom at the undergraduate level and then carries into the P-12 classroom. The College of Education faculty and staff are proud of these students as they engage in creativity and problem solving.”*

**Dr. Cathy Gunn, Dean, College of Education**

*“The faculty and staff within the arts, humanities, and social sciences applaud the focus and priority placed on learning that brings faculty and students together as collaborators in research and creative production. To be sure, an educational curriculum based upon engaged scholarship enhances a student’s entire academic experience by advancing interdisciplinary insights, deepening scholarly understandings and facilitating partnerships in practice. With this annual event, Morehead State University celebrates its culture of academic excellence and its long tradition of providing substantial educational opportunities to the citizens of Kentucky.”*



**Dr. M. Scott McBride, Dean, Caudill College of Arts, Humanities and Social Sciences**



*“The Celebration of Student Scholarship provides a wonderful opportunity to recognize and highlight student scholarship and creative accomplishments. Student research and creative activities, as a collaborative enterprise between student and faculty mentor, is a critical component of undergraduate education and enhances student success as well as teaching and learning across the academy. Students working with faculty experience the excitement of creating new knowledge and solving challenging problems – increasing important life skills in today’s world.”*

**Dr. Roger McNeil, Dean, College of Science and Technology**

# Celebration of Student Scholarship

Adron Doran University Center  
Morehead State University

April 25, 2012

---

## Concurrent Session – 301 ADUC

Moderator: Dr. Clarendia Phillips

**9 – 9:15 a.m.**                    **Kentucky’s potential for wood biofuel production**

**301**

***\*Amir Ahmadi, Dr. Michael Dobranski and Dr. Tyler Mark, Mentors, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

An Economic Feasibility Analysis: Yellow poplar is used to estimate the cost and revenue of a fast pyrolysis system. Bio-oil from the reactor is estimated via chemical and kinetic equations. Cost and revenues are then represented by the direct costing method. Current market conditions make it infeasible for using wood for bio-oil production. This research was partially supported by the MSU Undergraduate Research Fellowship Program.

**9:15 – 9:30 a.m.**                    **Relationships between psychological flexibility, physical health, and psychological distress**

**301**

***\*Aaron C. Ellis, Dr. J.T. Blackledge, Mentor, Department of Psychology, College of Science and Technology***

In Psychology, mental health and physical health are not only highly correlated, but may exert influences upon one another. The present research is focused on determining the nature of the relationship between Psychological Flexibility and physical health. Psychological Flexibility is a construct of Acceptance and Commitment Therapy (ACT) that is often a positive indicator of mental health. Another objective of this research is to describe the relationship between measures of psychological distress and psychological flexibility. The data of more than 200 MSU students will provide a validated framework on which research can be conducted to provide insight into the influences psychological flexibility exert on physical health and in the end hopefully contribute to health based interventions. This research was supported by MSU Undergraduate Research Fellowship.

**9:30 – 9:45 a.m.**                    **Paving success and college readiness in mathematics**

**301**

***\*Julie Lang, Dr. Dora Ahmadi, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

The presenter will discuss results from a project aiming at preparing high school seniors for college level mathematics. The program used the Hawkes Learning System to increase the interest and active participation of high school students during a three year project that has shown its sustainability. Follow-up results of the 2008 cohort of high school students who attended Morehead State University will be shared.

**9:45 – 10 a.m.                    Scopolamine effect on simple learning**

**301                                    \*Danielle Myers, Dr. Ilsun White, Mentor, Department of Psychology, College of Science and Technology**

The activation of cholinergic receptors is important in learning and memory. The role of muscarinic receptors in simple learning was examined in this study, using a rodent model. Rats were trained on the fixed-ratio (FR), which required them to make five lever-presses (FR5) to earn a one food pellet. Rats received saline or scopolamine (0.25 mg or 0.5 mg), a muscarinic receptor antagonist. Scopolamine increased the response latency and runtime, while decreasing the pellet consumption. Scopolamine did not affect the total number of lever-presses made to obtain the rewards. Our data suggest that the blocking of muscarinic receptors reflect reduction in motivation and consumption rate response rather than appetitive behavior. More rats will be added to the project in the future to solidify the data.

**10 – 10:15 a.m.                    Teaching strategies that “work” for students with moderate and severe disabilities**

**301                                    \*Suzannah M. Chapman, Dr. Sarah R. Hawkins, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education**

Systematic teaching strategies that “work” for students with moderate and severe disabilities include Systems of Least Prompts and Constant Time Delay. These strategies can be used to teach a variety of skills through the use of embedded instruction. Two case studies that explore the effectiveness of these strategies will be discussed. Additionally, information regarding implementing and collecting data on the teaching strategies will be discussed. The results of these case studies show that the strategies work and help students improve achievement on skills taught using these strategies.

**10:15 – 10:30 a.m.                Break**

**10:30 – 10:45 a.m.                The role of gender equality groups on a contemporary college campus**

**301                                    \*Danielle Story, Dr. Bernadette Barton and Dr. Constance Hardesty, Mentors, Department of Sociology, Social Work, and Criminology, Caudill College of Arts, Humanities, and Social Sciences**

Gender affects our lives from the day we are born. It determines what behaviors are acceptable, what clothes we wear, our self-image, family relationships, and sexuality. Gender impacts our education, the workplace and our careers. At the same time, gender inequality persists in daily life, and many problems arise from these inequalities. In Fall 2011 the investigator started a new student group, Student Association for Gender Equality (SAGE) on the campus of Morehead State University. Drawing on ethnographic observations made while forming SAGE and on in-depth interviews with group members, this study explores how contemporary college students’ understand and experience gender inequality. In particular, this study examines the most pressing gender issues faced by young people today, the motivations of participants to join a support organization, and what members envision the group’s role on campus. This research was supported by MSU Undergraduate Research Fellowship.

**10:45 – 11 a.m.                    The women speak: The loss and reemergence of Philomela’s voice in *The Color Purple***

**301                                    \*Kayla Burton, Dr. Philip Krummrich, Mentor, Department of International and Interdisciplinary Studies, Caudill College of Arts, Humanities, and Social Sciences**

The loss and reemergence of “voice” is a theme that has been common throughout feminist literature. Alice Walker utilizes this theme in *The Color Purple* to tell the journey that several women take to regain a voice that has been silenced or taken away by the violent acts of the males in their lives. Critics have studied Walker’s main character, Celie, and compared her to Philomela from Greek mythology. While it is true that Celie’s story does parallel Philomela’s, she is not the only female character of Walker’s with a story that does this. All of the females in *The Color Purple* share a similar story with Philomela, especially the character Sofia, who has received no attention from critics at this point.

**11 – 11:15 a.m.            Humanistic criminology: Explaining gendered and race identity, empathy, and helpful and hurtful behavior**

**301                            \*Hannah Willis, Dr. Rebecca Katz, Mentor, Department of Sociology, Social Work, and Criminology, Caudill College of Arts, Humanities, and Social Sciences**

Crime is gendered, particularly most violent crime. Sociological and criminological work reveals that identity is both gendered and raced or grounded in an ethnic consciousness. Our research objective is to develop and test a new humanistic theory of criminology through integrating a variety of diverse sociological models and criminological theories that will explain the gendered nature of crime. We argue that this model will explain hurtful behavior as well as helpful behavior. We recently received approval from the Department of Corrections to proceed with collecting data from male inmates from two correctional institutions in the state. In this presentation we will review our theoretical model, outline our research hypotheses and describe our qualitative and quantitative protocols. This research was supported by MSU Undergraduate Research Fellowship.

**11:15 – 11:30 a.m.        The Procne and Philomela Myth in western literature**

**301                            \*Faith E. Brown, Dr. Philip E. Krummrich, Mentor, Department of International and Interdisciplinary Studies, Caudill College of Arts, Humanities, and Social Sciences**

Ovid's lurid version of the myth of Procne and Philomela in the *Metamorphoses*, featuring rape, mutilation, cannibalism, and the transformation of the major characters into birds, has become the canonical version of the tale for most readers. The many authors who have retold the story, however, have exercised their freedom to change some of the details, even to the extent of omitting or replacing the gruesome ending found in Ovid's text. In this presentation, I will first recount Ovid's classic tale then examine a Spanish play about this fascinating story written by Francisco de Rojas Zorrilla, an author from Spain's Golden Age. This was an Undergraduate Research Fellowship project.

**11:30 – 11:45 a.m.        Madea, mammy, and racial stereotyping**

**301                            \*Devauna Lee Bolar, Dr. Ric N. Caric, Mentor, Department of International and Interdisciplinary Studies, Caudill College of Arts, Humanities, and Social Sciences**

This study investigates the "Madea" movies of Tyler Perry in relation to both other black-themed movies and to the history of racial stereotypes going back to the blackface minstrelsy of the 1840's. The Tyler Perry "Madea" movies are particularly striking for their reactivation of the "mammie" stereotype and their pairing of comedic stereotyping with various kinds of "rescue" motifs. This study compares Tyler Perry's use of the "mammie" stereotyping with the racial stereotyping of Ice Cube's Friday series and Martin Lawrence's "Big Momma's House" movies. It also compares Perry's use of racial stereotyping with the blackface minstrel music that brought racial stereotyping into mainstream entertainment during the 1840's.

# Concurrent Session – 302 ADUC

Moderator: Dr. Jennifer M.K. O’Keefe

**9 – 9:15 a.m.**                    **Forest composition and successional history at Spaws Creek Gorge, Menifee County, Kentucky**

**302**                                    **\*Kate Bomar, Dr. Allen C. Risk, Mentor, Department of Biology and Chemistry, College of Science and Technology**

The age of the forest at Spaws Creek Gorge was determined by evaluating core samples from trees that began growth prior to 1900. Marker years were used to cross-date samples and COFECHA was used to insure accuracy, with any flagged cores being re-evaluated. A major synchronized release event in 1908 suggests that the forest was cut in 1907. The current composition of the forest was described using importance values. *Liriodendron tulipifera*, *Tsuga canadensis* and *Betula lenta* are the most important species in the canopy with *Tsuga canadensis*, *Rhododendron maximum*, and *Tilia americana* dominating the understory layer. This research was supported by a grant from MSU’s Office of Research and Sponsored Programs and the Undergraduate Research Fellowship Program.

**9:15 – 9:30 a.m.**                    **Preliminary assessment of trapping methods for beetles for conservation evaluation**

**302**                                    **\*Jackie Carder, Rebecca Roberts, Dr. Sean O’Keefe, Mentor, Department of Biology and Chemistry, College of Science and Technology**

Biodiversity assessment is the foundation for conservation evaluation. Beetles are an ideal group to use for biodiversity assessment because they are extremely diverse, very abundant, fill numerous ecological roles, and can be assessed quantitatively and qualitatively by many means. This preliminary survey is to determine which trapping methods are most informative for beetle diversity studies. This preliminary study consisted of three standardized trapping methods (pitfall, Lindgren, and yellow pan traps) over a 16 day period (10 Aug – 26 Aug 2011). Several species were found only in one type of trap, and others were found in all types of traps. Yellow pan traps provided the greatest number of individuals as well as the greatest diversity of species, but Lindgren traps provided more unique individuals than did pitfall traps. This research was supported in part by MSU Undergraduate Research Fellowship.

**9:30 – 9:45 a.m.**                    **Effect of aspect on *Quercus Alba* tree ring growth, Eagle Lake, Rowan County, Kentucky**

**302**                                    **\*Allie R. Caudill, Dr. Allen C. Risk, Mentor, Department of Biology and Chemistry, College of Science and Technology**

The effect of aspect on *Quercus alba* tree ring growth was determined by examining 78 tree core samples (from 39 trees) taken from the secondary, 100 year old forest at Eagle Lake in fall 2011. Samples were collected, glued on mounts and sanded with progressively finer sandpaper in order to view the rings more clearly. Marker years were utilized to cross-date samples: COFECHA was then used to assess the accuracy of the years assigned to the rings. Trees from the east-facing slope exhibited a greater yearly average ring growth than trees on the south-facing slope. This variation is likely due to differences in evapotranspiration rates and in soil moisture availability of these two aspects. This research was supported by an MSU Undergraduate Research Fellowship.



**9:45 – 10 a.m.**            **Early spawning in Frecklebelly Darters (*Percina Stictogaster*): Adaptive for pelagic life?**

**302**                            **\*Carol-Rose Gingras, Jonathan D. Eisenhour, Dr. David J. Eisenhour, Mentor, Department of Biology and Chemistry, College of Science and Technology**

We hypothesize early spawning in the pelagic Frecklebelly Darter, *Percina stictogaster*, yields larger young that would be less vulnerable to predation. We examined two aspects: (1) whether young of Frecklebelly Darters are larger than other sympatric darters and (2) how pelagic Frecklebelly Darters are compared to other darters. Lengths and water column position were assessed from darters in the Red River from Summer and Fall of 2011. Frecklebelly Darter young were larger than those of benthic darters and similar in size to young of darter species that use the water column and the substrate as habitat. Our data is not inconsistent with the hypothesis that early spawning is adaptive for a pelagic lifestyle. This project was supported by funds from the BIOC department.

**10 – 10:15 a.m.**            **Woody plant species richness patterns and floristic inventory of Carter Caves State Resort Park, Carter County, KY**

**302**                            **\*Erica R. Eldridge, Dr. Allen C. Risk, Mentor, Department of Biology and Chemistry, College of Science and Technology**

Woody plant species were inventoried in several locations throughout Carter Caves State Resort Park with a result of 115 species, 3.5% being non-native and 1.7% considered rare species for Kentucky. The relationship of species richness and area was examined at six different spatial scales (0.01m<sup>2</sup> -1000m<sup>2</sup>) to determine the predictability of species richness with increasing area. Four plot complexes have been evaluated and mean species richness at 1m<sup>2</sup>, 10m<sup>2</sup>, 100m<sup>2</sup> and 1000m<sup>2</sup> was 4.4, 12.0, 23.5 and 44.5, respectively. Arrhenius and Gleasonian models of predicting species accumulation were applied to these data to determine the best method for estimation of overall woody plant richness for the park. This research was supported by a grant and an Undergraduate Research Fellowship from MSU.

**10:15 – 10:30 a.m.**        **Break**

**10:30 – 10:45 a.m.**        **Evaluating sensitivity to climatic variations of two woody plant species in Spaws Creek Gorge**

**302**                            **\*Russell Miller, Dr. Allen C. Risk, Mentor, Department of Biology and Chemistry, College of Science and Technology**

Do woody plant species act as indicators of past temperature and precipitation patterns? Two tree cores were obtained from canopy *Tsuga canadensis* and *Liriodendron tulipifera* occurring in 200 m<sup>2</sup> plots on north-facing slopes in Spaws Creek Gorge, Menifee County, in order to analyze the relationship between climate and tree growth. Sample tree cores were cross-dated by focusing on marker rings. COFECHA was then used as an additional check on dating accuracy. Preliminary results suggest that *L. tulipifera* is a better indicator of climatic conditions than *T. canadensis*. This research was supported by an Undergraduate Research Fellowship and a grant from Morehead State University.

**10:45 – 11 a.m.            The depositional environment and faunal diversity of the three lick bed of the Ohio shale (late devonian), East-Central Kentucky**

**302                            \*Larry Tackett, Kara Wells, Dr. Charles E. Mason, Mentor, Department of Earth and Space Sciences, College of Science and Technology**

This study examined the fauna contained in the type section of the Three Lick Bed of the Ohio Shale (Late Devonian), which is located in Rowan County, Kentucky, along I-64. The Three Lick Bed (a well known marker bed, especially for subsurface correlations) separates the underlying Huron Member from the overlying Cleveland Member of the Ohio Shale. The unit is 3.42 meters thick and is composed of three greenish-gray shale beds separated by two intervening black shale beds. The three greenish-gray shale units are hypothesized to have been deposited under dysaerobic conditions. The focus of this study was to examine the depositional environment and faunal diversity of the Three Lick Bed.

To date 300 kilograms of sample have been processed for macrofossils and 90 kilograms for microfossils. The samples were broken down using the kerosene technique and washed through a nested set of U. S. standard sieves, a #20 for macrofossils and a #100 for microfossils. The residue caught on the #100 sieve underwent heavy liquid separation and both the heavy and the light fractions were examined for microfossils. All picking, sorting, and identification of fossils were conducted under a binocular microscope.

The results of this study support the hypothesis that the greenish-gray shale units of the Three Lick Bed were deposited in a dysaerobic environment. Evidence supporting this conclusion includes the following: 1) a low diversity macro invertebrate fauna of 18 species, 2) of the 607 specimens identified all (except *Lingula*) were juveniles, 3) the fauna was dominated by mollusks, 14 out of 18 species, and 4) all macro invertebrates except *Lingula* were preserved as pyretic internal molds. Overall, benthic foraminifera dominate the microfossil fauna in both diversity and abundance, followed by ostracodes in terms of abundance. The macrofossil fauna is dominated by cephalopods being the most diverse (with 7 species) and a low-spired gastropod being the most abundant (296/607).

An MSU Undergraduate Research Fellowship awarded to Larry Tackett supported this study.

**11 – 11:15 a.m.            Comparative sensitivity of two oak species on east-facing and south-facing slopes located at Eagle Lake**

**302                            \*Kelly L. Modaff, Dr. Allen C. Risk, Mentor, Department of Biology and Chemistry, College of Science and Technology**

The effect of slope aspect (east-facing and south-facing) on sensitivity of *Quercus coccinea* (scarlet oak) and *Quercus alba* (white oak), two dominant canopy species at Eagle Lake, was determined by dendrochronological analysis. Two samples were taken per tree from ten scarlet oaks and ten white oaks on each aspect, mounted, then sanded with progressively finer paper with the purpose of making the rings more visible. Calendar years were then assigned to each annual ring. Cross-dating was accomplished by indicating and comparing marker years (1930, 1936, 1954, 1964, 1966, 1972, 1984, 1988, 2003, 2007). Pre-drought growth rates will be compared to post-drought growth rates to determine which species is more sensitive to environmental fluctuations and thus a better indicator of climatic conditions.

**11:15 – 11:30 a.m.      Organic petrography of a middle eocene lignite, Tennessee**

**302**

**\*Adam R. Layne, Dr. Jennifer M.K. O’Keefe, Mentor, Department of Earth and Space Sciences, College of Science and Technology**

The organic petrography of a low-rank, clay rich lignite from Weakly Co., TN is being examined using particulate pellets. It is thought that this lignite is part of the Claibornian-stage lignite outcrop belt. Petrographically, this deposit is similar in many aspects to known Claibornian-stage lignite deposits in Kentucky, in that it is composed primarily of clay and attrinite rich horizons that are well-rooted, contain abundant liptinite, and display evidence for extensive decay of original organic material prior to incorporation into the mire. Overall, petrography points toward organic deposition in a variably wet setting. Like similar deposits in Kentucky, the upper portions of the lignite contain blebs of anisotropic coke that are not associated with significantly increased inertinite content in the coal, likely representing remnants of crown fires in trees surrounding the mire.

**11:30 – 11:45 a.m.      Woody plant species richness in relationship to area in two Eastern Kentucky state parks**

**302**

**\*Lacey Pyles, Dr. Allen C. Risk, Mentor, Department of Biology and Chemistry, College of Science and Technology**

Can the species richness patterns of small areas (.01-1000m<sup>2</sup>) be used to estimate the species richness of larger areas? Species richness is a fundamental attribute of plant communities. Historically, two different approaches have been used to answer this question; first by Gleason, using a semi-log format, and second by Arrhenius, using a log-log format. Both approaches result in an overestimate of species richness of large scale areas. When these approaches were applied to the woody plant species richness patterns of plot complexes in both Carter Caves and Greenbo Lake State Resort Parks, large over-predictions resulted. Various approaches were used to quantify the overestimate between the actual and predicted results to provide a more realistic approximation. This research was supported by the Undergraduate Research Fellowship program.

# Concurrent Session - 312 ADUC

Moderator: Dr. Gregory Russell

**9 – 9:15 a.m.**                    **Morehead waste management analysis: How poor incentives make waste inevitable**

**312**                                    **\*Ezra Dike, Sharon Walters, Mentor, Economics Co-op Supervisor, College of Business and Public Affairs**

An analysis of Morehead's current waste management system components, fee systems, budgets and management revealed a set of incentives, which Morehead residents' behavior responds to, resulting in wasted resources and municipal funds. Free riding and economically rational behavior given bureaucratic constraints results in much higher rates of landfill usage than relative processing costs indicate would occur in a market setting. Cheaper than sending waste to the landfill, recycling should be the predominant path for people's waste. Finally, potential solutions to remedying this incentive problem created by the current municipally controlled waste management system are explored.

**9:15 – 9:30 a.m.**                    **The impacts of executive policy implementation on intergovernmental relations**

**312**                                    **\*Kaci Foster, Dr. Michael W. Hail, Mentor, School of Public Affairs, Department of Government and Regional Analysis, College of Business and Public Affairs**

This study examines the relationship of intergovernmental management to the constitutional structures of federalism. This study includes theoretical as well as empirical data. The research utilized content analysis and database coding to examine archival documents and assess intergovernmental management of federalism through regulatory enactments. Research activities included interviews with policy makers in Washington D.C. as well as archival research at the Library of Congress. One significant outcome from this research has been a Congressional Research study inspired by the federalism questions of this study. Preliminary findings suggested agency rulemaking holds a significant influence on federalism policy. This study was supported by an undergraduate research fellowship.

**9:30 – 9:45 a.m.**                    **Trigger events: Early life experiences fostering leadership development**

**312**                                    **\*Caitlin Bailey, Johnathan K. Nelson, Mentor, School of Business Administration, Department of Management and Marketing, College of Business and Public Affairs**

Leadership is a critical determinant of organizational success. Thus, it is important to understand how leadership is best developed. While research has identified many influences on leader development, the influence of early life experiences on leadership has received less attention. To begin to address this gap in the literature, we reviewed the leadership development literature to identify early life experiences that contribute to leader development. Based on this review, we will describe many of the early life experiences that contribute to leader development. By more thoroughly examining the events that spark individuals to take on and be successful in leadership roles, we will be able to more effectively meet the leader development needs in organizations.

**9:45 – 10 a.m.            A community indicator project for Morehead-Rowan County, Kentucky**

**312                            \*Victoria Adkins, \*Susan Ahmadi, \*Kate Bomar, Sarah Emeterio, Damion Jones, Christin Lail, \*Barbara Jeanelle Pridemore, \*Ashley Ruggiero, Dr. Christine McMichael and Dr. Stephen Lange, Mentors, RAPP 300: Seminar in Regional Issues I, School of Public Affairs, College of Business and Public Affairs**

Our Community Indicators Project (CIP) focused on improving our understanding of the factors contributing to quality of life and economic progress in our local community. Supported by information derived from the scholarly literature, the NewCity Morehead Report and over 16 real-world CIPs, we engaged in a rigorous process of identifying and selecting a proposed set of meaningful indicators for our community – for which we received positive community feedback, further validating our work. Within the time constraints of this semester-long project, we collected baseline data for 16 of our 85 indicators and produced a well-organized, informative, and appealing CIP report to share with the NewCity Morehead group and the wider community.

**10 – 10:15 a.m.            The role of Vietnamese economic reform in the expansion of middle class in Vietnam**

**312                            \*Yen Tran, Dr. S. Ali Ahmadi, Mentor, School of Business Administration, Department of Accounting, Economics, and Finance, College of Business and Public Affairs**

The purpose of this research was to investigate the role the economic reforms in Vietnam in the expansion of the middle class of Vietnam's middle class. The results of the study show that despite the expanded efforts and planning under the "Doi Moi" reform in 1986, which has resulted in impressive growth of the country, there has not been a significant expansion of the middle class in Vietnam. Economic data from World Bank, Vietnamese government sites, and other sources were analyzed and various measures of economic development were tested to achieve the results of this study.

**10:15 – 10:30 a.m.        Break**

**10:30 – 10:45 a.m.        A feasibility study of Dewey Lake trail system: An analysis of projected economic benefits and impact**

**312                            \*Nicholas D. Mason, Justin L. Austin, Corey Moore, Chango Noaks, Dr. Steve S. Chen, Mentor, School of Business Administration, Department of Management and Marketing, College of Business and Public Affairs**

The purpose of this project was to justify the rationales for constructing the Dewey Lake Trail System (DLTS) by utilizing public spending. In this study, the investigators surveyed 119 residents from the surrounding area of Floyd County at 2011 Jenny Wiley Festival. The results indicated the majority (92%) of the respondents would favor the idea of building the trail system. The trail project will attract residents to frequently engage in fishing, walking/hiking, camping, and horseback riding, attending cultural festivals, July 4<sup>th</sup> firework, and other trail and outdoor competitions. The DLTS is projected to generate an annual economic impact of \$1.7M to Floyd County. It is logical to assume that the building of the DLTS would be a feasible and profitable endeavor to pursue.

**10:45 – 11 a.m.                    Healthcare reform and the states: The beneficiaries and unlikely opponents of Obamacare**

**312                                        \*James T. Galbreath, Jonathan W. Pidluzny, Mentor, School of Public Affairs, College of Business and Public Affairs**

President Obama's 2010 Patient Protection and Affordable Care Act will reshape America's healthcare system. The law will help millions of uninsured Americans access health insurance by subsidizing the purchase of private policies, and by mandating a dramatic expansion of state-run Medicaid programs. This study investigates the cost and benefits of the law on a state-by-state basis. In addition to estimating the number of newly eligible Medicaid recipients in each state, this research predicts the budgetary impact of the mandated expansion for 2014 and 2020. This project, generously supported by an Undergraduate Research Fellowship, finds that Southern states, including Kentucky, stand to benefit disproportionately from the new law; the same states are, nonetheless, its most vociferous opponents.

**11 – 11:15 a.m.                    Chemical castration of sex offenders: Medical, ethical, and legal issues**

**312                                        \*Zachary Golleher, Dr. William C. Green, Mentor, School of Public Affairs, Department of Government and Regional Analysis, College of Business and Public Affairs**

Child sexual molestation and rape are crimes commonly punished by incarceration. As an alternative sentence, state trial court judges have granted sex offenders probation on the condition that they receive weekly injections of Depo-Provera, an FDA approved female contraceptive, in doses which total twelve to forty times the amount used by women every three months. Since Depo-Provera has not been clinically tested, nor FDA approved as a probation condition for men, the drug's criminal justice use, known as chemical castration, raises serious medical, ethical, and legal issues: its side effects are unknown, the defendants knowing and voluntary consent is impossible, and state probation statutes permitting or requiring its use violate his federal constitutional rights. This research was supported by an MSU Undergraduate Research Fellowship.

**11:15 – 11:30 a.m.                China's rising influence: Impacts on U.S. – China relation and the role of America in Asia**

**312                                        \*Yen H. Tran, Dr. James R. Masterson, Mentor, School of Public Affairs, Department of Government and Regional Analysis, College of Business and Public Affairs**

This project examines Sino-American relations and their influence on the relations between the United States and other Asian countries, such as Japan, the Koreas and South East Asian States. The goal is to illustrate how Sino-American economic interdependence (EI) affects political, military, and human rights issues between the states. The study uses an analysis of relevant news reports from major international sources and secondary sources found in the following books: *U.S. – Chinese relations: perilous past, pragmatic, present*; *The United States In Asia*; *US- China Relations in the 21<sup>st</sup> Century*. A comparison between the Bush administration's and the Obama administration's foreign policies reveals the advantages and disadvantages of the United States' current policy concerning China, and reveals constraints on U.S. policies towards China due to high levels of EI. This research was supported by the MSU Undergraduate Research Fellowship program.

**11:30 – 11:45 a.m.      Rousseau on reason: His aristocratic and conservative tendencies revealed**

**312**

**\*Alex Barker, Dr. Stephen J. Lange, Mentor, School of Public Affairs, College of Business and Public Affairs**

Jean-Jacques Rousseau, while widely regarded as one of the greatest Western philosophical minds, is often associated in modern academic circles with the fiery, passionate tenets of socialism and violent revolution. However, by examining Rousseau's position regarding reason and its proper role within society, a more accurate understanding of his thought will make itself apparent: namely, that Rousseau exhibited significant aristocratic and conservative tendencies in his work that have been largely misinterpreted or dismissed by modern scholars. Rousseau's philosophy allied itself much closer with the moderate American Revolution than it did with the excesses of the French Revolution; with Burke instead of Voltaire. These nuances of Rousseau's thought will be the central focus of the presentation. This research was supported by an MSU Undergraduate Research Fellowship.

# Concurrent Session – Commonwealth Room

Moderator: Dr. Stacy Baker

**9 - 9:15 a.m.                      Helping art teachers of Eastern Kentucky build an on-line community**

**Commonwealth**

**\*Julie Haymond, Dr. Joy Gritton, Mentor, Department of Art and Design, Caudill College of Arts, Humanities, and Social Sciences**

Art teachers in the region's public schools often lack sufficient funding and support, and sometimes work in relative isolation. The Eastern Kentucky Arts Project (EKAP) is helping to build an on-line community for art teachers in Eastern Kentucky. Lesson plans, projects, resources, and a discussion board have been made available through the EKAP website. A new Facebook page helps teachers connect and support one another. EKAP is also featuring interviews with high school art teachers and posting photos of their art work and their students' work to the website. The features include video, voice, and/or a written article that highlights the art teachers and hopes to generate recognition for teachers in the EKAP service region. This project was supported by an Undergraduate Research Fellowship.

**9:15 - 9:30 a.m.                      Trombonium: The art of doubling on trombone and euphonium**

**Commonwealth**

**\*John Douglas Handshoe, Dr. Stacy Baker and Dr. William Mann, Mentors, Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences**

For euphonium and trombone players, the ability to double and play both instruments is a valuable skill used in both teaching and performance. The purpose of this two-year undertaking has been to prepare a resource book for use by beginning doublers to provide a good foundation to begin their work on their secondary instruments. During the past year peer-input has been sought during the editing process and doublers have observed changes in their own doubling abilities as a result of working through the exercises in the book. MSU Graphic Design student Susannah Klooster has created an easily readable layout, illustrations throughout the book, and a website to market the finished project. This project is funded by an MSU Undergraduate Fellowship.

**9:30 – 9:45 a.m.                      Marketing trombonium: The art of promotional material**

**Commonwealth**

**\*Susannah M. Klooster, Dr. Joy Gritton, Mentor, Department of Art and Design, Caudill College of Arts, Humanities, and Social Sciences**

Graphic designers must be able to create an easily recognized brand for their clients. In addition, it is essential that skills in layout, illustration, and website design are demonstrated in a designer's portfolio. For this project I have created the layout, illustrations, and a website for a musical method book written by MSU Music Education student John Handshoe. I have researched the book's targeted audience, as well as appropriate software and a range of websites, in order to effectively apply my skills to working with an actual client and producing a real product. I had support from the Undergraduate Research Fellowship program.

**9:45 – 10 a.m.                      Exploring the elements of melodic design through composition**

**Commonwealth**

**\*Tyler Kline, Dr. Deborah Eastwood, Mentor, Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences**

"Melody is the very essence of music" – W.A. Mozart (1786). This legendary composer recognized melody as the primary element of music that listeners experience. For composers, finding the melody that sounds "right" can be challenging. This project will examine famous melodies to discover what they may, or may not, have in common, and what aspects of their structure make them so "tuneful" and memorable. Research will include the study of various written sources as well as musical works by notable teachers of composition and composers. Original compositions will also be created throughout the project, utilizing original melodic ideas. This research was supported by an MSU Undergraduate Research Fellowship.



**10 – 10:15 a.m.            On the path from planning to programming: Art events and exhibitions**

**Commonwealth**

**\*Carly Saunders, Jennifer Reis, Mentor, Department of Art and Design, Caudill College of Arts, Humanities, and Social Sciences**

The Undergraduate Fellowship in Art Events Management focuses on the conception, logistical planning, marketing, and management of arts programming. Working within the arts programming hosted by the Claypool-Young Art Gallery in the Department of Art and Design, UR Fellow Carly Saunders was involved with the planning and management of events during the 2011-12 academic year, including the Annual Craft Bizarre, seven exhibitions, and visiting artist programming. Her work on these projects included PR/marketing, hosting special evening and weekend events, exhibition installation, and event planning and troubleshooting. Through the programming at MSU as well as the Craft Bizarre, Ms. Saunders has become familiar with both for-profit and non-profit art sectors. This fellowship is designed to prepare a student to begin a career in arts administration or to pursue a degree in arts administration, museum studies, or an MFA in studio art. This project is supported by the Undergraduate Fellowship Program, the Department of Art and Design, and the Caudill College of Arts, Humanities, and Social Sciences.

**10:15 – 10:30 a.m.        Break**

**10:30 – 10:45 a.m.        Arranging and composing strategies for brass quintet and other brass ensembles**

**Commonwealth**

**\*Michael Pinkston, Dr. William P. Mann, Mentor, Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences**

Through the understanding and development of arranging and composition skills for the brass instrument idiom, the researcher composed several etudes for trumpet and created an arrangement for large brass ensemble of Gustav Holst's *Uranus* from *The Planets*.

**10:45 – 11 a.m.            The art of exhibitions and collections management**

**Commonwealth**

**\*Annie Peterson, Jennifer Reis, Mentor, Department of Art and Design, Caudill College of Arts, Humanities, and Social Sciences**

The Undergraduate Fellowship in Exhibitions and Collections Management focuses on the logistical planning and administration of arts programming and services. Working within the arts programming hosted by the Claypool-Young Art Gallery, UR Fellow Annie Peterson was involved with the coordination and management of art events during the 2011-12 academic year, including the organization of art submissions for the Bluegrass Bluegrass 2012 for independent jurying, and assisting in art handling, receiving, and installation with seven exhibitions. Her work included marketing, hosting evening and weekend events, and event organization. She was also involved with reorganizing/rehousing the University Art Collection in preparation for inventory. This fellowship is designed to prepare a student to begin a career in arts administration or to pursue a degree in arts administration or museum studies, or an MFA in studio art. This project is supported by the Undergraduate Fellowship Program, the Department of Art and Design, and the Caudill College of Arts, Humanities, and Social Sciences.

**11 – 11:15 a.m. Music education teaching techniques in a jazz ensemble compared to a concert band**

**Commonwealth**

***\*David C. Jump, Dr. Susan Creasap and Dr. Gordon Towell, Mentors, Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences***

Jazz band and concert band ensembles were observed at 5 different schools. This study compares teaching methods that are used in each ensemble. The jazz band rehearsals were mapped out using an arrow system in order to visually see the flow of a classroom as the ensembles were rehearsed. The concert bands were observed by using a rehearsal frame system where the entire rehearsal was broken down into smaller sections and then analyzed. The frames were identified by what the director did during that time (addressing a specific musical issue, playing through a section, explaining a concept from the piece, etc.). The results were then analyzed to not only compare different styles of teaching the same type of ensemble but also to compare the differences in teaching two different types of groups. This research was supported by MSU Undergraduate Research Fellowship and by MSU Honors Program.

**11:15 – 11:30 a.m. Marketing strategies for recruiting Japanese music majors to universities in the United States**

**Commonwealth**

***\*Ranko Shimizu, Dr. Deborah Eastwood, Mentor, Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences***

Japan has a population of approximately one-third that of the United States – smaller than the state of California – with one-tenth the number of music schools. This limits the opportunities available to students studying music at the college-level. Japanese music students would benefit from accessing the more extensive music opportunities available in the United States. A population decline, a challenging economic environment, and difficulties in the application/scholarship process may have contributed to a decrease in the last decade from 47,000 to 24,800 in the number of Japanese students currently studying in the US. This study aims to develop marketing strategies for recruiting Japanese music majors to universities in the United States. This research was supported by an MSU Undergraduate Research Fellowship.

**11:30 – 11:45 a.m. Appalachian Art on the Airwaves**

**Commonwealth**

***\*Travis Hall, Dr. Joy Gritton, Mentor, Department of Art and Design, Caudill College of Arts, Humanities, and Social Sciences***

Morehead State University senior Travis Hall has worked in conjunction with the Eastern Kentucky Arts Project and Morehead State Public Radio to develop Appalachian Art on the Airwaves. Appalachian Art on the Airwaves consists of feature reports for radio broadcast that aim at highlighting community growth and connectivity through art in the region. These features explore interviews with artists working in the area with a focus on how they use art to address the environmental, economic and social issues they face in Appalachia. The Appalachian Art on the Airwaves feature series is designed to foster healthy dialogue and real solutions in Appalachian communities while giving a venue by which artists in the region can communicate their ideas to the public. This project was supported by a MSU Undergraduate Research Fellowship.

**11:45 – 12:00 p.m. La Clarinette Universale: A comparison of selected French and American twentieth-century works for clarinet**

**Commonwealth**

***\*Amanda Brown, Dr. Lori E. Baruth, Mentor, Department of Music, Theater, and Dance, Caudill College of Arts, Humanities, and Social Sciences***

French and American composers treated the attributes of the clarinet differently in the twentieth-century. Through a comparison of works for clarinet by composers Claude Debussy, Yvonne Desportes, Leonard Bernstein, and Robert Muczynski, one can take a cross-section of French and American compositions from the early, mid, and late twentieth century to examine how the clarinet was employed by these well-known composers. Research shows cultural similarities in both the American literature, as well as the French literature. There is a high level of motivic use presented in the works of Debussy, Muczynski, and Bernstein. Desportes employs many extended techniques, with is not often used in the early part of the era. This research was possible through a MSU Undergraduate Research Fellowship.

# Concurrent Session – Eagle Meeting Room

Moderator: Dr. Dora Ahmadi

**9 - 9:15 a.m. Kentucky Rook: How to win**

**Eagle Meeting**

***\*Jorge Chang, Dr. Doug Chatham, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

Rook is a card game in which two teams of two players aim to reach a certain amount of points by taking specific cards in a series of tricks. The tricks consist on each player playing a card; the player who played the card with highest value takes the trick. This project aims to uncover the nature of the game and develop an algorithm to increase the chances of winning the game. The approach taken was to program an artificial intelligence for the game capable of following an algorithm to win the game every time chances allow it and relying as little as possible on luck. This research was supported by the MSU Undergraduate Research Fellowship Program.

**9:15 - 9:30 a.m. Statistical mechanics and knot mosaics**

**Eagle Meeting**

***\*Ronnie Howard, Dr. Russell May, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

Mathematicians have often used techniques from physics to solve combinatorial problems. A famous example of this is the solution of the alternating sign matrix conjecture, which relied heavily on methods from statistical and quantum mechanics. Here we discuss the problem of enumerating knot mosaics and make comparisons with solving the Ising model of planar crystals in statistical mechanics. This research was partially supported by the MSU Undergraduate Research Fellowship Program.

**9:30 – 9:45 a.m. Where’s the fire?**

**Eagle Meeting**

***\*Lindzey Thacker, Dr. Douglas Chatham and Dr. R. Duane Skaggs, Mentors, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

The existence of a fire in a building can be determined by placing alarms in specific rooms so that every room either has an alarm or is joined by a doorway to another room which has an alarm. Determining the exact *location* of a fire based entirely on which alarms sound typically required the placement of more alarms. Our research uses linear programming and graph theory to describe situations in which the minimum number of alarms needed to detect a fire is the same as the minimum number of alarms needed to locate the fire. Our research has applications in fault detection in computer systems, nuclear power stations, and sensor networks.

**9:45 – 10 a.m. Upper bounds on crossing numbers of knots in Radius 2 hextile knot mosaics**

**Eagle Meeting**

***\*Michael Jason McCord, Dr. Robin Blankenship, Mentor, Capstone, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

Lomonaco and Kauffman's investigation of characteristics and classifications of knots developed in square tile mosaics inspired the study of hexagon knot mosaics. This project investigates the maximum number of crossings that a member of various families of knots can have and still fit in a radius 2 hexagon knot mosaic.

**10 – 10:15 a.m.            I Call *Heads, Heads, Tails, Heads***

**Eagle Meeting**

***\*Chelsea Staton, Dr. Douglas Chatham and Dr. R. Duane Skaggs, Mentors, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

Typical decisions based on tossing a coin require a simple choice: Heads or Tails. We consider a game in which each player chooses a longer sequence such as Heads, Heads, Tails, Heads. A coin is then repeatedly flipped and the player whose chosen sequence appears first is the winner. We discuss the following questions:

- (1) What is the probability of each person winning given their individual selections?
- (2) If Player 1 has made a selection, what is the optimal strategy for Player 2?
- (3) What is the expected length of the toss sequence when a given player wins?

This research was completed as part of the course requirements for MATH 499C and MATH 499D.

**10:15 – 10:30 a.m        *Break***

**10:30 – 10:45 a.m.        **Design and fatigue study of intravascular coronary stents using finite element analysis****

**Eagle Meeting**

***\*Jared D. May, Dr. Rajeev Madhavannair, Mentor, Department of Applied Engineering and Technology, College of Science and Technology***

Fatigue is a material failure due to cyclic forces acting upon said material. Fatigue can make the material fail before the stresses reach ultimate tensile strength or fracture strength. Intravascular coronary stents are subjected to cyclic loads when placed in vivo. Once in the coronary artery, stents are loaded with systolic and diastolic pulse pressures. The purpose of this research entitled *Design and Fatigue of Intravascular Coronary Stents Using Finite Element Analysis* will study the impact of cyclic load on various stent geometries. This research will also parametrically design a coronary stent that will provide comparable fatigue life to commercially available stent designs. SolidWorks design software will be used to create three dimensional geometries of the stents as well as parametrically design a stent. Abaqus finite element analysis software will be used to simulate in vivo artery conditions. It will also be used to crimp the stent models and then deploy them within the artery. The stent fatigue will be analyzed using modified Goodman failure criteria. Each of the stent geometries will be tested using a variety of materials. These materials include 316L stainless steel, nitinol, and poly-L-lactic acid. An analysis of variance will determine if stent geometry, material, or a combination of the two have the greatest impact on fatigue life.

**10:45 – 11 a.m.            **Of fish and bus routes: Finding more efficient bus routes for Rowan schools****

**Eagle Meeting**

***\*Logan Higginbotham, Dr. Timothy O'Brien, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

I intend to find a more cost effective system of bus routes by first using the Capacitated Arc Routing Problem (CARP) model. From there, I will use a transformation described in the paper "Exact Methods Based on Node-Routing Formulations for Undirected Arc-Routing Problems" so that the CARP will be a Capacitated Vehicle Routing Problem (CVRP). I will then solve the CVRP and reverse the transform back into a CARP. This research was partially funded by the MSU Undergraduate Research Fellowship Program.

**11 – 11:15 a.m.            Hand gesture recognition for intelligent translation of American sign language**

**Eagle Meeting**

***\*Brad Schneider, Dr. Sherif Rashad, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

This presentation will discuss efforts to create an automated system which is able to translate American Sign Language (ASL) to text or speech. Using feature extraction and artificial intelligence techniques, the system will be able to interpret and translate several American Sign Language (ASL) gestures from an image source. This will be especially useful for users who must use ASL in communicating daily and may have future applications in several areas, especially on mobile or public platforms, for these users. The focus of the presentation will be on the discovery of artificial intelligence techniques which provide a high accuracy of correct sign recognition.

**11:15 – 11:30 a.m.            Putting the brown thing in the round thing: A look inside NCAA basketball rankings**

**Eagle Meeting**

***\*Katie Hunter, Dr. Chris Schroeder, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

Millions of fans every year wait on the edge of their seat around the beginning of March to see if their favorite team will be invited to play into the NCAA Basketball Tournament. March Madness is one of the most watched events throughout the whole year where millions of fans predict who will win in postseason play. How can math help? We will consider two mathematical methods for ranking sports teams, the Colley Matrix and the Massey Method, and apply these methods with modified weighting systems in an attempt to find a way to accurately predict the outcome of post-season games.

**11:30 – 11:45 a.m.            Development of a star pippier for roll determination in small satellites**

**Eagle Meeting**

***\*Tyler G. Rose, Kevin Z. Brown, and Dr. Benjamin K. Malphrus, Mentors, Department of Earth and Space Sciences, College of Science and Technology***

Morehead State University's Space Science Center was granted a launch opportunity for a scientific Cubesat through NASA's ELaNa program in January of 2011. The satellite, the Cosmic X-ray Background Nanosat (CXBN), was designed and developed entirely in-house at Morehead State University. The science mission for CXBN mandated a robust attitude determination system. Previous Cubesats have favored magnetometers, sun sensors, and MEMS gyroscopes for their scientific attitude knowledge. In spin stabilized spacecraft, a system can be formed by combining the roll rate from MEMS gyros with a star sensor 'pippier' to generate an absolute position pulse as a star transits the viewing area. This paper will describe the star pippier development process and introduce the mission which is scheduled for launch in August of 2012.

# Concurrent Session - Riggle Room

Moderator: Dr. Thomas Pannuti

**9 - 9:15 a.m.                      Orbital and dynamical modeling of a 3U Cubesat in low earth orbit**

**Riggle**

***\*Jonathan Fitzpatrick, Dr. Benjamin K. Malphrus, Mentor, Department of Earth and Space Science, College of Science and Technology***

Many satellite functions are dependent on and require specific orbital parameters. Analytic Graphics Incorporated (AGI)'s Satellite Tool Kit (STK) can be used to simulate upcoming space missions as well as theoretical missions. By implementing 3-D modeling software such as Solidworks, custom three-dimensional models can be made to further increase simulation accuracy and to accurately model sections of a satellite that must move independently of each other and successfully track two separate celestial bodies at all times. By incorporating these customized 3-D models of satellites into simulations with orbital parameters, mission critical dynamics can be accurately determined and statistical errors defined. These simulations are used to increase the chance of mission success. A theoretical mission has been modeled using both Solidworks and STK to illustrate the full capabilities of Satellite Tool Kit in mission planning, execution, and even determining mission lifetime. The modeled satellite has two sections that will track the sun for maximum solar panel efficiency and track the center of the earth for a sensor such as a camera. Results of the simulation are provided in this presentation.

**9:15 - 9:30 a.m.                      VLF observations of meteor showers using the INSPIRE VLF-3**

**Riggle**

***\*Daniel Wayne Burton, Dr. Jennifer J. Birriel and Dr. Ignacio Birriel, Mentors, Department of Mathematics, Computer Science, and Physics, College of Science and Technology***

The INSPIRE (an acronym for “Interactive NASA Space Physics Ionosphere Radio Experiments”) Project has been providing simple, low-cost receivers for high school and college students to observe very low frequency (VLF) radio waves from Earth’s ionosphere. It can detect VLF signals from natural and man-made sources in the frequency range of 0-22 kHz. INSPIRE was originally designed for the study of VLF waves generated in lightning strikes to study Earth’s magnetosphere and ionosphere; however, the investigators have utilized the device to study the VLF emissions associated with meteor showers. The presented will discuss some preliminary results.

**9:30 – 9:45 a.m.                      A manufacturing facility design study using intelligent objects-based simulation modeling**

**Riggle**

***\*Amariah E. Belcher, Dr. Nilesh N. Joshi, Mentor, Department of Applied Engineering and Technology, College of Science and Technology***

Use of intelligent objects-based simulation modeling is relatively new in manufacturing facility planning and design. In this type of modeling, the intelligent objects built by modelers can be used repetitively for multiple modeling projects. SIMIO is one such 3D modeling environment which lets the modelers create 3D models using intelligent objects. In this project, the goal was to explore the benefits and capabilities of intelligent objects-based simulation for design studies of manufacturing facilities. A simulation model was developed using SIMIO to study the design of a prototype facility to manufacture and assemble an adjustable wrench. Alternative scenarios were developed by changing the buffer capacities for individual workstations to determine the most efficient layout. This project is supported by a grant from the SIMIO LLC and the MSU Undergraduate Research Fellowship.

**9:45 – 10 a.m.                    A search for X-ray counterparts to candidate radio supernova remnants in the galaxy NGC 4258**

**Riggle                                    \*Caleb K. Grimes, Dr. Thomas G. Pannuti, Mentor, Department of Earth and Space Science, College of Science and Technology**

We present a search for X-ray counterparts to known candidate radio supernova remnants (SNRs) in the nearby spiral galaxy NGC 4258. This galaxy features numerous discrete radio sources – including 12 candidate radio SNRs – that were identified by Hyman et al. (2001) at 6cm and 20cm. Results from analysis of archival Chandra X-ray data shows 5 of the 12 candidate radio SNRs have X-ray counterparts. Hardness ratios suggest that one source (H2) exhibits SNR-like characteristics while the other four counterparts feature hard X-ray emission consistent with X-ray binaries rather than SNRs. Based on spectral fitting results we suggest that H11 is an X-ray binary/SNR system similar to the sources MF16 in NGC 6946 and X6 in M81. Further comparisons to these analog sources will be discussed.

**10 – 10:15 a.m.                    Analysis of current trend of highway maintenance to determine future improvements**

**Riggle                                    \*David May, Dr. Sanjeev Adhikari, Mentor, Department of Applied Engineering and Technology, College of Science and Technology**

Highway system needs to develop a better innovative way to maintain so that it can help to effectively lengthen the life of our current highway system. Maintaining and keeping roads safe is an essential part of traveling in everyday life. Research will be performed in order to analyze the condition the highway in presently, and to determine successfully what types of materials should be used and under what conditions to improve the longer-term reliability of the highway system for the future. The intention of this project is to analyze the current trend of highway maintenance, in a specific case study between Morehead and Lexington on I-64 West bound. Investigation in determining what different types of good material could be implemented in order to make the highway more durable is essential.

**10:15 – 10:30 a.m                Break**

**10:30 – 10:45 a.m.                Solar radiation measurements for Eastern Kentucky**

**Riggle                                    \*Brandon Scott White, Dr. Hans Chapman, Mentor, Department of Applied Engineering and Technology, College of Science and Technology**

Solar radiation data is essential for effective design of solar energy systems. As interest in renewable forms of energy grows, easy access to reliable region-specific solar irradiance data has become urgent. Agencies such as the National Renewable Energy Laboratory (NREL) provide general solar radiation resources for the United States. However, there is only a limited amount of solar resource data specific for the Eastern Kentucky region that will assist developers engaged in the installation of green technologies. This research seeks to characterize measurements of solar radiation in the region, using MSU as a test site.

Initial data survey has been done using live meteorological data from the Kentucky Mesonet Station at the Morehead State University Derrickson Agricultural Complex at Morehead, KY. For the second stage of this work, a designed experiment approach will be employed to analyze the data collected compare them with those based on calculations.

**10:45 – 11 a.m.                    From dream to reality: PocketQub: The smallest satellite ever to be flown in space**

**Riggle                                    \*Jordan J. Healea, Robert Twiggs, Mentor, Department of Earth and Space Sciences, College of Science and Technology**

As technology advances all the devices that surround us become smaller; yet more capable. In the space industry this holds true as well. Due to the innovative designs of emerging technology, what once took the space of a car can now be compacted into something the size of its horn, and the Pocket Qub will do just that. The PocketQub was invented by Professor Bob Twiggs in 2010 as a follow-on to the CubeSat, pushing the envelope of small satellites. PocketQubs are 5 cm x 5 cm x 12.5 and have a mass under 0.25 kg. A team of students and faculty at the Morehead State University Space Science Center are developing one of the first PocketQubs—Eagle-1. The approach taken on designing the payload for the Pocket Qub is to integrate a circuit with the Picaxe 14M2 processor. The circuitry will contain components that will measure values such as: battery current, battery voltage, on board temperature, and external temperature. Once these values have been obtained by the Pocket Qub it will then transmit the values to a ground station using Morse code. Eagle-1 is scheduled for launch from Russia in 2012.

**11 – 11:15 a.m.                    A complementary archival X-ray study of blazars observed in the L-band**

**Riggle                                    \*Benjamin Cahall, Dr. Thomas G. Pannuti, Mentor, Department of Earth and Space Sciences, College of Science and Technology**

We present an analysis of the X-ray spectra of a sample of blazars, such as 3C 273 and 1 ES 2344+514, that are candidates for long-term radio monitoring observations with the 21-Meter Space Tracking Antenna at Morehead State University. These spectra were extracted from data obtained by archival pointed observations made with the *Chandra* X-ray Observatory and were fit with several different models, including a simple power law and a thermal plasma model. The main goal of this work is to identify spectral variations in the X-ray spectra of blazars and determine if these variations correlate with other properties of blazars. The ultimate goal of this work is to determine whether these blazars are suitable candidates for radio observation with the 21 Meter Space Tracking Antenna. The results from analysis will be presented.

**11:15 – 11:30 a.m.                    Open-circuit voltage decay of CdTe solar cells**

**Riggle                                    \*Trenton Peterman, Dr. Kent Price, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

The need for reliable, efficient, and inexpensive solar cells has become apparent as the energy crisis continues to escalate. One solution to these problems is the use of thin-film PV modules, which are playing an increasingly important role in alternative energy production, and are more cost-effective than the traditional silicon based solar cells. However, more conclusions can be drawn about the electrical properties of these cells, and the performance of these devices can still be improved. One method of characterizing the electrical properties of solar cells is Open-Circuit Voltage Decay. This initiative focuses on the Open-Circuit Voltage Decay of Cadmium Telluride (CdTe) PV Cells, which are currently leading the market in thin-film PV cell production. We studied the Open-Circuit Voltage Decay as a function of time across CdTe cells of varying thickness, which is modeled by an exponential decay function with two time constants. We also observed the relationship between the voltage decay of the solar cell and the solar cell performance. This research was supported by MSU Undergraduate Research Fellowship.



**11:30 – 11:45 a.m.      Developing mechanical systems for Nanosatellites—An iterative step-wise approach**

**Riggle**

***\*Margaret Powell, Kevin Brown and Dr. Benjamin Malphrus, Mentors,***  
**Department of Earth Space and Science, College of Science and Technology**

The technologies involved in nanosatellites and microsatellites have evolved to the point where these systems are highly capable and are being developed by government space agencies, defense organizations, aerospace companies, research institutions and universities. The benefit of these small satellite systems are numerous and include: 1.) relatively low development costs, 2.) rapid development time, 3.) evolving capabilities, 4.) important niche applications. To develop these systems at low cost and on compressed timelines, an iterative step-wise approach is used by our development group that involves computer aided design (using CAD programs), rapid prototyping (using a printed 3-D printing system), development of engineering models (in quasi-flight materials) and fabrication of flight models from flight materials. The first three steps are iterated to evolve the design into a final, functional state that meets the required performance specifications. All of these processes are accomplished by undergraduate students in faculty in-house in the facilities of the Space Science Center at Morehead State University.

# Poster Session I

1 – 2:30 p.m.

Crager Room

**P. 1. A community indicator project for Morehead-Rowan County, Kentucky**

**Crager**

***\*Victoria Adkins, \*Susan Ahmadi, \*Kate Bomar, Sarah Emeterio, Damion Jones, Christin Lail, \*Barbara Jeanelle Pridemore, \*Ashley Ruggiero, Dr. Christine McMichael and Dr. Stephen Lange, Mentors, RAPP 300: Seminar in Regional Issues I, School of Public Affairs, College of Business and Public Affairs***

Our Community Indicators Project (CIP) focused on improving our understanding of the factors contributing to quality of life and economic progress in our local community. Supported by information derived from the scholarly literature, the NewCity Morehead Report and over 16 real-world CIPs, we engaged in a rigorous process of identifying and selecting a proposed set of meaningful indicators for our community – for which we received positive community feedback, further validating our work. Within the time constraints of this semester-long project, we collected baseline data for 16 of our 85 indicators and produced a well-organized, informative, and appealing CIP report to share with the NewCity Morehead group and the wider community.

**P. 2. Does a balanced diet improve mood?**

**Crager**

***\*Victoria Adkins, Dr. Timothy Hare, Mentor, School of Public Affairs, Institute for Regional Analysis and Public Policy, College of Business and Public Affairs***

What are the behavioral effects of a stable, nutritious, and low-fat diet? This project entails working with a small group of female students to monitor their eating habits and associated physical and behavioral changes that result from adopting a stable, nutritious, low-fat diet. Subjects record what they eat and other factors in journals during one week to provide a basis for analyzing data to identify relationships among physical and behavioral patterns. Analysis focuses on attentiveness in class, mood changes, and perceptions of energy or anything else subjects might notice that is different from previous patterns. Funding for this project was provided by the Undergraduate Fellowship Program.

**P. 3. Federalism: From the Articles to the Constitution**

**Crager**

***\*Autumn B. Baker, Dr. Michael W. Hail, Mentor, School of Public Affairs, Department of Government and Regional Analysis, College of Business and Public Affairs***

This study examines the changes to sovereignty for the States as the nation transitioned from the Articles of Confederation to the 1787 Constitution. The research utilized content analysis to examine archival documents to assess the balance of federalism through the transition from the Articles. Research activities included interviews with policy makers in Washington D.C. as well as archival research at the Library of Congress. Preliminary findings suggested limited influence on current issues but significant, if underappreciated, structural influence from the Articles and the associated transitional federalism. Additionally, more archival work extended the research findings and included the analysis of the structural affects of the Seventeenth Amendment.

**P. 4. The causes and consequences of political polarization in the United States**

**Crager**

***\*Johnathon Dye, Jonathan W. Pidluzny, Mentor, School of Public Affairs, College of Business and Public Affairs***

Public interest in politics and elections, as measured by voter turnout and the attention devoted to political issues by both the media and ordinary citizens, has increased dramatically over the course of the last decade. To explain this trend, scholars have identified the impact of consequential political events including the contested result of the 2000 presidential election, the terrorist attacks of 9/11, the transfer of the presidency from a Republican to a Democrat in 2008, and the 2009 recession. Increasingly, it appears most political controversies are driven not by the events themselves, but by intensifying political affiliations among high-attention voters. This research, generously supported by an Undergraduate Research Fellowship, examines the media's role in the increasing polarization of the American electorate.

**P. 5. The effect of the Lincoln Douglas Debates on early American political discourse**

**Crager** \*Cody Murphy, Dr. Murray Bessette, Mentor, School of Public Affairs, College of Business and Public Affairs

The 1858 campaign for Illinois's Senate seat, which pitted Abraham Lincoln against Senator Stephen A. Douglas, was an unprecedented event. The debates which compose the core of this campaign were a public discussion of the most pressing issues of the day: the fundamentals of liberty, the "peculiar institution" of slavery, federal-state relations, and what the ideals asserted in the *Declaration of Independence* truly meant. This paper traces the history of slavery in the United States, from the initial period of colonization, through the founding of the country, to the debates themselves. It then analyzes the respective positions of the two candidates, as well as the immediate effect of debates had in preparing the country for the Union's greatest crisis – the Civil War.

**P. 6. Epidemiology of COPD in central Appalachia**

**Crager** \*Nicole Johnson, Chad Wells, Dr. Timothy Hare, Mentor, School of Public Affairs, Institute for Regional Analysis and Public Affairs, College of Business and Public Affairs

COPD is one of the leading causes of death in the United States. To explore the regional impact of COPD, we examined mortality rates due to COPD across central Appalachian and identified disparities with the highest rates. Our review of the epidemiological literature led us to target a wide range of factors that might explain the disparities. For instance, we compiled geographical data on air pollution, geology, genetics, tobacco use and mining. Using regression analysis, we found that tobacco use and coal mining do not adequately explain the level of COPD mortality in the region. These results lead us to explore geological characteristics and air pollution more closely. A KBRIN-AREA Award and the Booth Endowment support this research.

**P. 7. The sense of self with regards to wealth in Jane Austen's *Sense and Sensibility***

**Crager** \*Laura Pfalzer, Dr. Murray Bessette, Mentor, School of Public Affairs, College of Business and Public Affairs

Wealth is an important part of life, influencing myriad societal conventions. The inflationary period of the eighteenth century produced many cultural shifts. One of particular significance was the rise of the female novelist, who wrote to illustrate the gravity of her domestic plight – constrained not only by traditional gender roles, but by the choke hold of economic inflation. Jane Austen's novel *Sense and Sensibility* depicts money's grasp on society and its influence over the individual. Moreover, it displays the uncanny ability of material matters to overshadow those of the heart. An examination of Austen's characters shows us the many ways in which the sense of self can interact with the importance of wealth.

**P. 8. Federalism and administrative law: Regulatory power and the U.S. Constitution**

**Crager** \*Ashley Ruggiero, Dr. Michael W. Hail, Mentor, School of Public Affairs, Department of Government and Regional Analysis, College of Business and Public Affairs

This research examines the Administrative Procedures Act (APA) and the affects on state authority and regulatory federalism. A database of state administrative regulations is under development and the results of administration policy are being analyzed. The initial results reflect a breadth of administrative law and regulatory policy at the state and federal levels. Further study will examine the changes to sovereignty for the States as the nation transitioned to a regulatory state from a period of decentralized dual federalism.

**P. 9. Health care accessibility in Appalachia**

**Crager** \**Morgan Stratton, Dr. Timothy Hare, Mentor, School of Public Affairs, Institute for Regional Analysis and Public Policy, College of Business and Public Affairs*

Access to health care is an important issue facing every community. In this study, data was gathered from a database search and census data that determined the number of primary care physicians in Kentucky's Appalachian counties. Using this data and information from the literature review, a survey was created to find out how accessibility to health care providers affects the behavior of those needing treatment.

**P. 10. Military modernization of China**

**Crager** \**Biswas Sharma, Dr. James Robert Masterson, Mentor, School of Public Affairs, Department of Government and Regional Analysis, College of Business and Public Affairs*

This research project will describe the military modernization of the People's Republic of China from the late 1990s, when the capabilities of the People's Liberation Army (PLA) was assumed to be modest, exaggerated and unnecessarily alarmist, to the early 2010s when it is reported to have a fairly modernized army capable of conducting effective military operations on land, in air, at sea and in space. It will quantitatively and qualitatively examine the strength of the People's Liberation Army Ground Force, Air Force, Navy and the Second Artillery Corps, as well as the various aspects and past achievements of PLA's Integrated Network Electronic Warfare strategy. It will also point out some areas of weaknesses of the PLA with special attention given to Chinese strategic security objectives. This research is supported by MSU Undergraduate Research Fellowship.

**P. 11. China's rising influence: Impacts on U.S. – China relation and the role of America in Asia**

**Crager** \**Yen H. Tran, Dr. James R. Masterson, Mentor, School of Public Affairs, Department of Government and Regional Analysis, College of Business and Public Affairs*

This project examines Sino-American relations and their influence on the relations between the United States and other Asian countries, such as Japan, the Koreas and South East Asian States. The goal is to illustrate how Sino-American economic interdependence (EI) affects political, military, and human rights issues between the states. The study uses an analysis of relevant news reports from major international sources and secondary sources found in the following books: *U.S. – Chinese Relations: Perilous Past, Pragmatic Present; The United States in Asia; US – China Relations in the 21<sup>st</sup> Century*. A comparison between the Bush administration's and the Obama administration's foreign policies reveals the advantages of the United States' current policy concerning China, and reveals constraints on U.S. policies towards China due to high levels of EI. This research was supported by the MSU Undergraduate Research Fellowship program.

**P. 12. Southeast Asian reforms - Why has the international development of China and Vietnam differed significantly?**

**Crager** \**Lauren VanHook, Dr. James Masterson, Mentor, School of Public Affairs, Department of Government and Regional Analysis, College of Business and Public Affairs*

After World War II, China and Vietnam experienced radical governmental transformation, altering their standard operations. Both countries changed into communist states, renovating industrial polices and export focus. Despite these changes occurring during the Cold War, both states emerged relatively successfully. China is the second largest economy and Vietnam averages 7% annual GDP growth since 1990, however, both states exhibit different concentrations and developments. This paper performs a comparative analysis of how economic and governmental reforms resulted in differing international developments of two similar states. The paper will then examine the concluding differing characteristics of each country, addressing why these difference transpire. This research was supported by MSU Undergraduate Research Fellowship.

**P. 13. Abortion in America: Factors that impact state abortion rates**

**Crager** \**Evetts Wilks, Jonathan W. Pidluzny, Mentor, School of Public Affairs, College of Business and Public Affairs*

Since *Roe v. Wade* was decided in 1973, abortion has been the most controversial political topic in America. The Supreme Court's discovery of a woman's constitutional right to an abortion eliminated states' authority to ban the procedure outright. Since many states have worked hard to craft and implement laws that regulate the procedure, or restrict access to it, in the hope of reducing the number of abortions performed. The author's previous research found only a very weak correlation between the restrictiveness of the state's regulatory regime and the number of abortions performed there. This project, generously supported by an MSU Undergraduate Research Fellowship, analyzes the impact of other factors including access to contraception, levels of educational attainment, and socio-economic status.

**P. 14. An examination of behavioral data as indicators of student-athletes' academic success**

**Crager** \**Nicholas D. Mason, Corey Moore, Dr. Steve Chen, William Salazar, and Steven Middleton, Mentors, School of Business Administration, Department of Management and Marketing, College of Business and Public Affairs*

This project examined daily behavioral data as an indicator of student-athletes' academic success. The primary objectives of the study were to (1) identify the most effective criterion for predicting prospective and current student-athletes' academic success, (2) formulate successful strategies to monitor student athletes' use of their time based on survey results, and (3) produce an educational documentary film that portrays the life and experience of an intercollegiate student-athlete. The results indicate time spent in study and leisure activities is a more relevant factor and indicator (than standard test scores alone) of a student-athletes' academic achievement. Understanding these findings will help athletic administrators and tutor coordinators to teach, monitor, and supervise student-athletes' time management behaviors.

**P. 15. Examination of social media adoption by Fortune and Inc. 500 companies**

**Crager** \**Matthew Wells, Dr. Janet Ratliff, Mentor, School of Business Administration, Department of Management and Marketing, College of Business and Public Affairs*

The purpose of this research study was to analyze Fortune 500 and Inc. 500 companies with regard to social media usage and adoption. Additional research analyzed the impact that top executive's (Chief Executive, Chief Information, and Chief Marketing Officers) gender has in correlation to social media usage. Company websites and social media sites were examined to identify usage and adoption of the following: Facebook, Twitter, LinkedIn, Myspace, Tumblr, YouTube, RSS, and blogs. Frequencies and chisquare distributions were evaluated for differences of adoption level by the social media site, and by the gender of top executives. Research was supported by MSU Undergraduate Research Fellowship.

**P. 16. The alternative: bringing art to non-traditional student learners**

**Crager** \**Elizabeth Dunnavan, Jeanne Petsch, Mentor, Department of Art and Design, Caudill College of Arts, Humanities, and Social Sciences*

The goals of this Undergraduate Fellowship project are to provide meaningful learning experiences in visual art to the middle school students at the Bluegrass Discovery Academy (Rowan County Alternative Middle and High School), while creating a written, photographic, and video documentary of these experiences over a 10-week period during the Spring 2012 semester. This documentary 1) provides insight into the lives and capabilities of alternative middle school students, 2) examines the teacher's role as an exemplar and mentor, 3) provides examples of how meaningful teaching in art can invite students to explore, discover and contribute their personal expression, and 4) illustrates the development of alternative school students' creativity through their artwork and art making experiences. This project is supported by the Undergraduate Fellowship Program and the Department of Art and Design.

**P. 17. Young artists' identity and involvement in Eastern Kentucky communities**

**Crager** \*Emily Jackson, Dr. Joy Gritton, Mentor, Department of Art and Design, Caudill College of Arts, Humanities, and Social Sciences

This presentation examines findings gathered from interviews with young artists in Eastern Kentucky about their communities, their involvement, and their identities as Appalachian artists. How do young people define "community"? In what ways do they participate in their community/communities, and do they feel included? If their art doesn't conform to the commonly held notions of what Appalachian art can be, do they label themselves as Appalachian artists? What kinds of communities do young Eastern Kentucky artists want to build, and what can be done to encourage community involvement? The project has been supported by a MSU Undergraduate Research Fellowship.

**P. 18. Glaze research**

**Crager** \*Calie Morgan, \*Aspen Grender, Seth Green, Mentor, Department of Art and Design, Caudill College of Arts, Humanities, and Social Sciences

For this research we have tested, recorded, evaluated and retested a number of glaze formulas that can be used in ceramic art. Ceramic glazes are created from clay and raw materials extracted from the earth. Glazes are applied to ceramic surfaces that change in appearance in a kiln according to firing temperature and atmosphere. Through this experience we have learned valuable information about the science involved in making ceramic art. This research was supported by a MSU Undergraduate Research Fellowship.

**P. 19. Eastern Kentucky music: Providing accessibility through the web**

**Crager** \*Kayla Sheppard, Dr. Joy Gritton and Jesse Wells, Mentors, Department of Art and Design, Caudill College of Arts, Humanities, and Social Sciences

The Eastern Kentucky Arts Program (EKAP) has sought to nurture the visual arts of Kentucky's Appalachian counties by providing information on the region's arts-related resources. Now EKAP is collaborating with the Kentucky Center for Traditional Music (KCTM) to include Appalachian music. Listings of area musicians, performance venues, events, instructors, and more will be provided through the project's website. Transcriptions of select oral histories from the KCTM archives are being posted to the site to facilitate public access. The archives' digital audio and video files include examples of traditional Appalachian music and culture. EKAP student interns are also recording contemporary oral histories of significant Eastern Kentucky musicians for preservation and dissemination through the EKAP site and radio. This research was supported by MSU Undergraduate Research Fellowship.

**P. 20. Songs from the hills: Women and traditional music**

**Crager** \*Hardy Breeding, Dr. Ann Andaloro, Mentor, Department of Communication, Media, and Leadership Studies, Caudill College of Arts, Humanities, and Social Sciences

This project will document a history of women in traditional music. It will take an ethnographic approach. The method of inquiry will be in-depth interviews with female musicians including Carla Gover, Rayna Geller, Gloria Belle, Ginny Hawker, Rory Block, Hazel Dickens, Carol Elizabeth Jones, Laura Boosinger, and Kathy Chiavola. The research will provide an introduction, transitions and a conclusion that will weave together the interviews with musical performances.

The video documentation will be aired on MSU-TV and submitted to KET. This project will be submitted to local, regional and national film festivals and video competitions.

**P. 21. Promotion of arts programs supported by the Caudill College of Arts, Humanities, and Social Sciences**

**Crager** \**Katlyn Comley, Dr. Janet Rice McCoy, Mentor, Department of Communication, Media, and Leadership Studies, Caudill College of Arts, Humanities, and Social Sciences*

This project applies lessons learned in the classroom to the promotion of arts programs supported by the Caudill College of Arts, Humanities, and Social Sciences. This research focused on the public relations tactics used to promote university events and organizations including the Madrigal, ArtXtra, The Little Company, and the Arts Humanities Council. The public relations products created for this engaged scholarship project include both traditional print items and new media targeted at publics in MSU's service region. Items are created through effective research, writing, and design skills. Furthermore, goals are matched to create a comprehensive strategic communication plan. This research was supported by MSU Undergraduate Research Fellowship and the Boyer's scholarship of engagement.

**P. 22. Engaging the world through service: Exploring international service-learning opportunities**

**Crager** \**Caitlin Farhat, Dr. Janet Rice McCoy and Louise Cooper, Mentors, Department of Communication, Media, and Leadership Studies, Caudill College of Arts, Humanities, and Social Sciences*

This research project explores *best practices* in international service-learning programs. Noted educator, John Dewey observed, "That this revolution should not affect education in other than formal and superficial fashion is inconceivable." The foundation for this study is built upon a review of literature on the theories of service-learning. In addition, more detailed information will be collected through a variety of research methods including surveys, focus groups, and interviews with students and faculty who have participated in international service-learning. The purpose of this data collection is to identify successes and complications when implementing international service-learning experiences. This research was supported by MSU Undergraduate Research Fellowship.

**P. 23. Internalized racism: *JET* magazine "Beauties of the Week"**

**Crager** \**Alia McDole, Dr. Janet Rice McCoy, Dr. Ritta Abell, and Brice Yates, Mentors, Department of Communication, Media, and Leadership Studies, Caudill College of Arts, Humanities, and Social Sciences*

Internalized racism exists between light-skinned and dark-skinned Black women. Hughes and Hertal (1990), Klonoff and Landrine (2000), and Hill (2011) have explored this form of racism including the role played by society, family, and the media. This study examines how visual images in *JET* magazine contribute to internalized racism. *JET* is a current weekly magazine for readers of African descent—it was first published in November 1951. The data set consists of photographs of "Beauties of the Week." Internalized racism is explored by looking at photographs to determine whether light-skinned or dark-skinned Black women were more prevalent. Ultimately, this study explores if racism can exist within the same racial group impacting magazine cover models, job opportunities, and even a mate. Supported by: Undergraduate Research Fellowship.

**P. 24. Vegetarians kill Christian missionaries: A frame analysis of 19<sup>th</sup> century newspaper coverage**

**Crager** \**Hailley White, Dr. Janet Rice McCoy, Mentor, Department of Communication, Media, and Leadership Studies, Caudill College of Arts, Humanities, and Social Sciences*

This research examines the Kucheng Massacre—an event that happened in Fujian Province in southern China on August 1, 1895. Nine British missionaries representing the Anglican Church Missionary Society were killed by members of a Chinese vegetarian sect, along with the five year old son and baby daughter of one of the couples. Walter Fisher's narrative paradigm and Erving Goffman's theory of framing are used to analyze the accounts of this incident as printed in the *London Times*. Fisher's narrative paradigm is used to identify the four primary players in the drama—missionary, vegetarian sect member, British government official, and Chinese government official. Then Goffman's theory is used to identify the conceptual frames various authors used when writing for the newspaper.

**P. 25. Regional results for exploring literature curriculum alignment and instructional support for Kentucky English teachers**

**Crager** \**Christine Burton, Kathryn Mincey, Mentor, Department of English, Caudill College of Arts, Humanities, and Social Sciences*

The recent curricular and accountability changes effected by Senate Bill 1 will have a major impact on language arts teachers in Kentucky. Due to these changes, Professor Mincey, Caitlin Lacey, and Christine Burton have conducted a survey to be taken throughout the state of Kentucky to determine texts commonly taught, pedagogical practices, and teacher dispositions concerning the new Common Core State Standards. Because our regional area has historically lagged behind in the "trickle-down" of national and state curricular/instructional initiatives, Christine Burton is focusing on the regional results and how the data compares statewide. This information will be used to inform professional development opportunities hosted by Morehead State University. This specific aspect of the project is being supported by the Center for Regional Engagement Undergraduate Regional Fellowship.

**P. 26. Exploring literature curriculum alignment and instructional support for Kentucky English teachers**

**Crager** \**Caitlin Lacey, Kathryn Mincey, Mentor, Department of English, Caudill College of Arts, Humanities, and Social Sciences*

The recent curricular and accountability changes effected by Senate Bill 1 will have a major impact on language arts teachers in Kentucky. Due to these changes, Professor Mincey, Caitlin Lacey, and Christine Burton have conducted a survey to be taken throughout the state of Kentucky to determine texts commonly taught, pedagogical practices, and teacher dispositions concerning the new Common Core State Standards. The survey focuses on a state wide sample and holds some interesting implications for the field of English Education. This information will be used to inform professional development opportunities hosted by Morehead State University. This project is being supported by the Morehead State University Undergraduate Research Fellowship.



**P. 27. Finding the right time for confidence**

**Crager** \**Megan Lewis, Dr. Deanna Mascle, Mentor, Department of English, Caudill College of Arts, Humanities, and Social Sciences*

Focusing on a person's writing and having confidence in that person's ability to successfully write directly relates to the ability to teach writing. However, some teachers still struggle in the classroom with their writing confidence. This confidence or lack thereof is also titled "self-efficacy" – a subject the Morehead Writing Project has been attempting to study and understand for the past several years. The National Writing Project is designed to help teachers improve their own writing and their understanding of teaching writing across all subjects and grade levels. The understanding is that if teachers are more positive in their writing and teaching self-efficacy, they will carry that over to the classroom where they will be better teachers and better able to connect to their students.

The 2011 participants of the Morehead Writing Project's Summer Institute came in with an average confidence in their writing and teaching writing ability around 81.5 out of 100. After completing the Summer Institute, the participants left with an average confidence of 88 out of 100. In each individual category, there were significant improvements of as much as 13.9 points. However, the cyclical pattern appears to emerge in the September survey as the total confidence dropped 2 points and one category saw a loss of 9 points in confidence. Through analyzing the different high and low points of the year, we will be able to see what months teachers struggle the most to be able to offer additional support.

**P. 28. The metaphysics of quantum mechanics: All facts are relations**

**Crager** \**Isaac L. Casto, Dr. Christina M. Conroy, Mentor, Department of History, Philosophy, Religion, and Legal Studies, Caudill College of Arts, Humanities, and Social Sciences*

This project suggests the idea that, at the very base of reality, all facts are relations. This raises two important questions: the question of temporary intrinsics and one of regress. Both questions are dealt with through the course of the project. Ultimately, the goal of this project is to provide the foundational research, vernacular, and theories to begin analyzing the metaphysical relationship of facts, space, and time when placed in the realm of Quantum Mechanics; the same arguments, however, may hold an over-arching importance to general physics as well. In the future, this project will serve as a reference for one of greater scope and difficulty. This project is supported by an MSU Undergraduate Fellowship.

**P. 29. Confederate pride in the south**

**Crager** \**Alli Collis, \*Margo Hunt, Benjamin Fitzpatrick, Mentor, Department of History, Philosophy, Religion, and Legal Studies, Caudill College of Arts, Humanities, and Social Sciences*

The Civil War is often called the bloodiest war in American history. However, the war was fought with more than just bullets. Strong hatred existed between the two sides. The Confederacy had a strong sense of pride, and knew what it was fighting for. The war's results not only shaped the U.S. government system, but also left behind many of the social sentiments that existed within the two regions. Displays of southern pride still shown today are a result. These sentiments are expressed in various ways. Re-enactors work to preserve the history of the Civil War, while blatant displays of southern pride seem to be the result of ignorance. This research project examines the extent of Confederate pride remaining in the South, and the motivations these sentiments.

**P. 30. Beyond study-abroad: Undergraduate research in Ukraine**

**Crager**

**\*Bradford Miller, Dr. Adrian Mandzy, Mentor, Department of History, Philosophy, Religion, and Legal Studies, Caudill College of Arts, Humanities, and Social Sciences**

Study abroad provides students with a myriad of benefits, opportunities, and experiences. One program in particular, the KIIS Slavic Europe summer program, directed by Adrian Mandzy of Morehead State University, allows prospective students to conduct and present individual research at an international academic conference hosted by National University, L'viv Polytechnic in L'viv, Ukraine. Dr. Mandzy acts as the American students' ambassador to the conference by issuing a call for papers, selecting abstracts, and co-hosting the conference in Ukraine. In Summer 2011, I presented my own independent research at the conference; *The International Conference for Young Researchers in History and Historical Preservation*. At the conference, I presented my research to professional academics and governmental representatives from over eight countries across Europe. This research was supported with an undergraduate fellowship.

**P. 31. An analysis of the elements of relativism and skepticism within Taoism**

**Crager**

**\*Jonathan A. Modaff, Dr. Wendell O'Brien, Mentor, Department of History, Philosophy, Religion, and Legal Studies, Caudill College of Arts, Humanities, and Social Sciences**

The Taoist philosophy embraces several defining theories and conceptions that collectively act as the foundational elements to this distinct way of thought. Within the following paper and analysis will be provided of two major components central to the Taoist philosophy: relativism and skepticism. These two particular inherent Taoist qualities have greatly shaped the position of Taoism within the realm of world philosophies, and have also acted as the precursor to various relativist and skeptic systems of thought in both the east and the west. Chuang Tzu's *The Chuang Tzu* is an extremely influential Taoist text and provides a collection of sayings and parables that illustrate the strong relativist and skeptic attitude particular to Chuang Tzu's form of Taoism. The context of this paper will be concerned mostly with the first seven chapters, the "Inner Chapters", of *The Chuang Tzu* and will be used as the basis for analysis.

**P. 32. John Brown: The difference between martyrdom and insanity**

**Crager**

**\*Kameron Williams, \*Michael Cundiff, \*Rebecca Parker, Dr. Benjamin Fitzpatrick, Mentor, HIS 303-001 The Civil War and Reconstruction, Department of History, Philosophy, Religion, and Legal Studies, Caudill College of Arts, Humanities, and Social Sciences**

The notoriety of John Brown and his raid on Harpers Ferry, driven by the strong reactions over his activities and death, has survived over one hundred and fifty years to result in a continued debate over the morality of his character and his contributions to the American Civil War. Although John Brown upheld the same notions regarding the integrity and superiority of his beliefs over the values maintained by oppositional groups that would eventually motivate Confederate and Union soldiers to fight, the Southern states interpreted the Harpers Ferry raid as a direct attack against their principles, encourage them to organize and mobilize their state militias, while the Union propagated his martyrdom as a symbolic statement of the sanctity of Northern ideologies.

**P. 33. Promotion of the Appalachian studies minor**

**Crager**

**\*Amy Payne, \*Oana Nae, Dr. Joy Gritton, Mentor, Department of International and Interdisciplinary Studies, Caudill College of Arts, Humanities, and Social Sciences**

Our goal is to increase awareness of the Appalachian studies minor. Nae, a public relations major, created promotional materials, while Payne, a journalism major, focused on surveying. Payne gathered information from other universities with Appalachian studies programs, and the pair decided, from the responses, to pursue a minor fair. The fair would allow all of the minors to have an opportunity to promote themselves to the student body. This event is still in the planning stages. In addition, I would like to express my appreciation for my Undergraduate Research Fellowship, funded by the Honors Scholarship.

**P. 34. Ye Olde Madrigal Feaste: Director**

**Crager** \**Jessica R. Arnett, Dr. Lisa Morse, Mentor, Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences*

The annual Madrigal Dinner is a special Holiday Dinner Celebration in the style of renaissance England. Each fall the music and theatre departments collaboratively work together for this magical dinner show. As in years past a student was responsible for directing it. The student director is responsible for script analysis, research of the time period, casting the show, creating a rehearsal schedule, props design, collaborating between departments, and blocking of the show. A rigorous research, design, and collaboration process was followed by two months of rehearsals and finally three shows. The show allowed friends and family of Morehead State University to ring in the Holidays as it was done centuries ago. This research was supported by an MSU Undergraduate Research Fellowship.

**P. 35. A trombonist's guide to trombone publications**

**Crager** \**Justin Croushore, Dr. William Mann, Mentor, Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences*

From all over the world and through various writers, a vast array of material has been made available to the practice and performance repertoire for trombonists. This project provides the modern trombonist with a series of resources that can be used while selecting materials for practice and performance. Important features of each resource are provided, including a description of what developmental level each material may be best suited for. The resources provided through this project are designed to help the student find materials that suit their current needs, and also to help teachers form a curriculum for progressive development on the trombone. Research for this project has been supported by a MSU Undergraduate Research Fellowship.

**P. 36. The evolution and development of the trombone valve**

**Crager** \**Adam Dixon, Dr. William Mann, Mentor, Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities and Social Sciences*

The basic design of the trombone hasn't changed since the late 1400's. The most significant development in the design of the trombone was the introduction of the valve in 1839 by Christian Friedrich Sattler. Since then, many valves have appeared on the market offering different options for the trombonist. There's a lack of knowledge available to the average trombonist regarding the different valves and the purpose behind the development of each valve. This project offers an indepth explanation of the purpose behind the development of each valve, as well as the characteristics of each valve, so that the average trombonist will be able to compare each option available to them before purchasing a new trombone. This project was supported by an MSU Undergraduate Research Fellowship.

**P. 37. Choro: Interpreting the music of Pixinguinha**

**Crager**

**\*Ann Francis, Jennifer Brimson-Cooper, Mentor, Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences**

This study focused on flute improvisational and ornamental techniques in Brazilian choro, particularly as found in the works of famous and prolific choro composer Pixinguinha. Analysis and thorough performance notes of two of his most famous works, *Carinhoso* and *Chorei*, favorably illustrate the stylistic features of this genre of composition and the flutist's approach to performance of this style. Many publications of choros are written "straight." This study will help flutists understand the correct interpretations of rhythms and articulations not indicated in the music. Primary sources include Julie Koidin's *The Brazilian Choro: Historical Perspectives and Performance Practices*, *Choro* by T. Livingston-Isehour and T. Garcia, and private study with Brazilian flutist and choro composer, Felipe Moritz. This research was supported by a MSU Undergraduate Research Fellowship.

**P. 38. Production designer for the Little Company show *Lily Plants A Garden***

**Crager**

**\*Emily Shaw, Denise Watkins, Mentor, Department of Music, Theatre, and Dance, Caudill College of Arts, Humanities, and Social Sciences**

The collaborative process for building the children's show *Lily Plants A Garden* began in October 2011. As production designer, I was in charge of designing the costumes, set, and props for the entire production. I began by reading the script several times, then sketching out how I saw each costume. I used research images from the internet and cartoons as inspiration to generate how I saw the imaginative pieces as well as the props, once the props and costumes were established, I produced the set design. At the beginning of January, the show came to life as the production team and I began to build the show. In two weeks my designs sprang to life to create the show! The actors began to use the pieces and now the show is touring to grade schools throughout Kentucky.

**P. 39. Identifying resource disparities in the Gateway service region: A needs assessment**

**Crager**

**\*Sarah Johnson, Dr. Lisa Shannon, Mentor, Department of Sociology, Social Work, and Criminology, Caudill College of Arts, Humanities, and Social Sciences**

The goal of a needs assessment is to gather data to examine the pervasiveness of a social problem. Gateway Community Action Council completes an annual needs assessment to identify disparities in community resources to develop a strategic funding plan for a five county service area. Data for this poster are derived from 389 clients who completed the needs assessment survey. The median age of the participants was 51.38 (SD = 18.36). The majority were Caucasian (87.9%) and female (67.9%). A little under one-third (32.1%) were married. The median household gross income was \$10,861.00. The biggest needs identified by participants were income management (35.3%) and employment (14.4%). Support for this project was provided by an undergraduate research fellowship from the Sociology, Social Work, and Criminology Department.

**P. 40. The juvenile epidemic: Human trafficking and the drug trade**

**Crager**

**\*Sonja Pennington, Dr. Elizabeth Biebel, Mentor, Department of Sociology, Social Work and Criminology, Caudill College of Arts, Humanities, and Social Sciences**

I am currently assisting Dr. Biebel on research involving Human Trafficking. Human Trafficking is the second largest and the fastest growing criminal industry in the world, with the Drug trade coming in at the number one spot. With the profit margin these two industries provide it's no surprise that the two often are intertwined. Since about half of the victims of human trafficking are thought to be children, this research is to help determine if there is a major correlation between the drug trade and Juvenile Human Trafficking. One method we propose to employ to more clearly see the connection between the two is by mapping the most prominent drug trade areas, and then mapping areas where most cases of juvenile human trafficking has occurred. This research was supported by MSU Undergraduate Research Fellowship.

**P. 41. Human trafficking task force: The Eastern Kentucky initiative**

**Crager** \**Staci Shelton, Dr. Elizabeth Biebel, Mentor, Department of Sociology, Social Work, and Criminology, Caudill College of Arts, Humanities, and Social Sciences*

Humans are ranked number two in the United States for goods trafficked, second only to drugs. Kentucky has uncovered more than three cases in the last year alone, identifying it as a growing epidemic. This project details the initiation of a Human Trafficking Task Force in Eastern Kentucky. With the collaboration of social service entities, Doves, Gateway Homeless Coalition, Police, MSU, churches and the Community, The Eastern Kentucky Initiative has made progress towards the informational goals its mission statement suggests: *A victim-centered alliance assembled by professional and community organizations with united disciplines for the sole purpose of human trafficking prevention in Eastern Kentucky through education, awareness and training. Our initiative protects victims through avocation and support services in the communities we live and teach.*

**P. 42. The trend of physical activity in children's play in the past 30 years**

**Crager** \**Katarina Chalk, Dr. Mee-Ryoung Shon, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education*

With the growing epidemic of childhood obesity in the US, the researcher started her initial investigation on 'how seriously parents and professionals have been paying their attention on childhood obesity' through the analysis of *Young Children and Dimensions* for the last 30 years. As the continuum of this study, the focus has been expanded on the analysis of outdoor physical activities. The focus of the current study is to collect physical activities predominated among diverse age groups, to analyze trends of childhood play types, and to present the values of physical activities for the prevention of childhood obesity. Interviews were conducted to collect the data, and KY IECE Standards as well as KY Core Academic Standards are adapted to address the value of physical activities for the development of 'Whole Child.'

**P. 43. Embedding pre-kindergarten math standards within inclusive preschool classrooms**

**Crager** \**Suzannah M. Chapman, Dr. Sarah R. Hawkins, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education*

This project shares the results of a single subject study that assessed the effects of embedding systematic instruction when working towards math pre-kindergarten standards. Teachers in an inclusive public preschool classroom implemented authentic assessment strategies, selected individualized pre-math objectives, embedded the math objectives in classroom activities, and monitored children's progress, in which all had significant disabilities. The results show that: a) teachers can reliably teach children with significant disabilities within inclusive classroom activities and b) the children can acquire pre-math skills with high levels of accuracy. This research was supported by a MSU Undergraduate Research Fellowship, and the Office of Regional Engagement.

**P. 44. Successes and failures of conducting a transition fair**

**Crager** \**Amy Clausen, Dr. Sarah R. Hawkins, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education*

Over the past three years, students from EDSP 372, Transition to Adult Life and the Student Council for Exceptional Children have partnered to host a Transition Fair for individuals with disabilities from surrounding counties. The Transition Fair included three breakout sessions for students and also a chance for students to meet representatives from colleges, state agencies, and organizations. The purpose of this study is to synthesize survey data from participating teachers and agencies across the past three years. Another major component of this research is to take comments from the teachers and agencies along with research regarding transition to adult life to make suggestions and changes for future Transition Fairs. This research was made possible by the Honors Program and Kentucky Council for Exceptional Children

**P. 45. The types of research being conducted on public libraries in the United States of America**

**Crager** \**Alicia Rigdon, Dr. Jane Arrington, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education*

Public libraries in the United States are uniquely positioned to influence the literacy development of children across the country. Public libraries offer a wide variety of literacy experiences to patrons of all ages, but the study this review of literature will eventually support will ask what programs in the state of Kentucky are offered for children from birth to grade 12, and what books are read and recommended to them during the implementation of these programs in the state's approximately 207 public libraries. A literature review was implemented in order to determine the types of research being conducted about public libraries in the United States of America. The research was compiled into separate categories including: librarians, summer reading programs, technology usage and effects, reading habits and attitudes, and library usage by residents. Information within each category represents the studies and reports that have been conducted in the last five years.

**P. 46. How local teachers handled disasters and major historic events in their classrooms: An oral history**

**Crager** \**Rachel Bender, Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education*

A qualitative research study in which interviews with local retired and current teachers about the impact historic events and disasters had on their classrooms as they transpired will be conducted. Topics included the Challenger disaster and September 11 terrorist attacks. These responses will be compared and contrasted to discover how teachers approach current events with their students. It will serve as an oral history and guide for teachers.

**P. 47. Action research: Repeat after me**

**Crager** \**Ashley Benjamin, \*Stephanie Orcutt, Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education*

Working in a special education resource room, the problem of students following directions arose. Through an action research project, data from two classes and two control group classes was examined to determine if an intervention improved student understanding of directions and increased student time on task resulted due to fewer explanations. Students were asked to repeat or paraphrase directions before once they were given, before starting independent work. The goal was to achieve 80% accuracy with the intervention.

**P. 48. Strategies for helping students with AD/HD stay focused and on task**

**Crager** \**Allison Bond, Melissa Ewers, and Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education*

The research I conducted was based on four students in a 3<sup>rd</sup> grade classroom that are diagnosed with ADHD. Before I implemented strategies on helping them be successful in the classroom, I collected data on what was distracting them and ways they were losing focus during seven classroom days. After I was able to see what was distracting the students the most and what areas of the day they were losing their focus I activated strategies that seemed appropriate to controlling their behavior and focus. Some strategies were applied to all four students while some were individual.

**P. 49. Adaptable games and the learning process**

**Crager** \*Alana Bradway, Kimberely Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education

Students tend to learn best if they are able to relate what they are learning to real-world situations. Based on the hypothesis that students who are exposed to government material through games would improve their learning and understanding, this action research study examined the use of real world government terms in the classroom and their effect on learning.

**P. 50. Action research: The effect of student energizers on student behavior**

**Crager** \*Courtney Callis, Kimberely Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education

A common enigma that teachers struggle with is keeping AD/HD children on task and out of trouble. Every child is different and unique. What works with one child is not always helpful with another. AD/HD can cause inattentiveness, over-activity, impulsivity, or a combination of all of these traits. Elementary school is a complicated time for students with AD/HD as most have recently been diagnosed or are undergoing attempts to regulate medication dosages. This project attempted to determine what activities could help AD/HD students remain on-task for longer periods of time. The effects of using energizer exercises to routinely provide movement to students three times a day for five minutes was examined to see if student behavior improved.

**P. 51. Questioning strategy for reading comprehension**

**Crager** \*Brittany Campbell, Kimberely Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education

The purpose of this research is to determine whether the Questioning Strategy for Comprehension is effective. Using a sample of twenty-three 3<sup>rd</sup> students, the study identified three students whose reading comprehension was lower than average. Over the course of eight lessons these students were given small group instruction and later reassessed. In the small group instruction the teacher used 95% Group materials to teach the students to use the Questioning strategy while reading. The students used both reading passages from 95% Group as well as their own reading materials to practice this strategy. The students continued to practice this strategy over the course of 4 weeks. At the end of four weeks the students were administered a post-test.

**P. 52. Action research study: Rewarding good behaviors in the classroom to decrease unwanted behaviors**

**Crager** \*Whitney L. Caudill, Kimberely Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education

In regards to the excessive disciplinary issues within the classrooms of today's society, classroom management strategies need to be seen as a high priority and implemented in order to decrease the amount of disruptive behaviors occurring within the classroom. My study focuses on decreasing these behaviors by placing the responsibility on the children themselves. Positive reinforcement is used in order to reward the children who carry out daily procedures correctly without having to be reminded. After collecting data for 6 weeks (3 weeks without rewards, 3 weeks with rewards) my results were astonishing!

**P. 53. Lesson plans for Star Theater programs**

**Crager** \**Laura Compton, Kimberly Nettleton, Eric Thomas, and Louise Cooper, Mentors, Department of Early Childhood, Elementary, and Special Education, College of Education*

This project will be a display consisting of lesson plans developed to be used in conjunction with programs available at Morehead State University's Star Theater. Ms. Compton viewed programs, and with core content in mind, developed grade school level lesson plans to be sent to teachers whose students view Star Theater programs. The lesson plans can be used either prior to or after the students and their teachers visit and are designed to broaden and deepen the educational experience. This project was supported by an Engagement Fellowship through the Center for Regional Engagement.

**P. 54. Action research: Flip charts and behavior**

**Crager** \**Laken DeHarte, Samantha Sparks, Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education*

The use of visual aids as a tool for classroom management was researched in fourth grade classrooms. Data was collected on the number of redirections and misbehaviors in the classroom. The use of a visual aide to remind students of behavioral expectations was introduced and the results were compared.

**P. 55. Escuela Rayo de Luna**

**Crager** \**Stephanie Gebka, Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education*

A program for parents and students who have English as a second language, Escuela Rayo De Luna is built on Cora Wilson Stewart's moonlight school model. Through monthly meetings, parents and children come together to learn American culture. By working with parents, the schools, and members of the community, the research is focused on finding the most effective ways to support ESL families.

**P. 56. Action research: Rewarding students for on-task sustained silent reading**

**Crager** \**Katie Heupel, Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education*

In a third grade classroom students have sustained silent reading every morning. Many students were pretending to read, or pretending to search for books. The results of using a reward system for on-task behavior were analyzed. The reward system improved students' time on task.

**P. 57. Action research: Improving reading retention and student comprehension**

**Crager** \**Kayla Grace Hicks, Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education*

Teachers constantly want to improve student understanding of the texts they read. This action research project investigated if a single intervention would benefit students, both above and below the norm. Using a reading focus and reflections, data was collected on retention of information and comprehension of the text. The results were examined to see if the intervention should be implemented regularly in the classroom.



**P. 58. Action research: Time management in the classroom**

**Crager** \**Kristin Horrell, \*Sarah Phillips, Kimberely Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education*

Often, time is being wasted in the classroom due to the lack of a structured routine. Using two kindergarten classrooms at a local elementary school, the impact of an organized, structured routine, was compared to the loosely structured day to determine the impact of time management in the classroom.

**P. 59. Student reactions to classroom management tools**

**Crager** \**Doris Ison, Kimberely Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education*

Behavioral problems are becoming more prevalent in the classrooms of today. However, teachers can gain control of their classroom again, and increase instructional time, with effective classroom management tools. Therefore, this case study addresses the implementation of two distinctly different classroom management tools, the rhythmic clap and Woodstock JingleBand, in a fifth grade classroom. The student's reactions, to each tool, were recorded and compared, in order to determine which tool was a more efficient classroom management tool.

**P. 60. Action research: Behavior plan**

**Crager** \**Devan Jordan, Kimberely Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education*

Many teachers establish behavior management plans early in the year and the fail to consistently follow them or never establish procedures for classroom behavior. The behavior plan in place in a classroom was examined and in an attempt to improve academic achievement through a more structured classroom environment. The data was gathered over a period of weeks and compared pre and post intervention.

**P. 61. Action research: Decreasing the amount of time spent outside the classroom**

**Crager** \**Kallie Lake, Kimberely Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education*

This action research project arose from a concern over the amount of learning time students lost through unnecessary trips outside of the classroom. Students were provided with positive reinforcement to stay in the classroom and on task. The data collected before and after the implementation of the reinforcement plan was examined. This project was conducted with the support of my mentor teacher, Tiffanie Helderbrand of Tilden Hogge Elementary School.

**P. 62. Action research: Differentiating phonics centers to increase student's success**

**Crager** \**Emily Lewis, Kimberely Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education*

Due to the vast amount of student learning at different levels, students need activities that are at their learning level but still provide a challenge. In this study, students were grouped into leveled reading groups. The activities in learning centers were preselected to correspond with the learning level of each group. Differentiation data was compared to undifferentiated learning experiences to determine if this intervention is really effective in improving student learning at all levels. This action research project was conducted with the help of Martha Thomson, First grade teacher at McBrayer Elementary.

**P. 63. Action research: The effects of seating arrangements on classroom behavior**

**Crager** \*Ashley Marie Miller, Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education

This study compared the effects of two classroom seating arrangements; group seating and row seating, on the behavior of third grade students. Observations of the behavior of twenty-five third grade students seated in small groups was compared to their behavior when the seating arrangement was changed to row seating. The data collected was analyzed to determine the implications on classroom management.

**P. 64. Action research: Providing students with written and verbal directions**

**Crager** \*McKenzie Montgomery, Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education

Valuable instructional time in a fourth grade class was being lost due the excessive amount of time it was taking to repeat direction to students. Working with the teacher, an action research project was conducted, to see if providing students with both written and verbal instructions improved time on task.

**P. 65. Action research: Positive versus negative reinforcement in the classroom**

**Crager** \*Emily Northcutt, Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education

Successful teachers often use motivational programs to support student learning and appropriate behavior. When implementing a program, teachers must determine whether to use positive or negative reinforcement: either give students something or taking something away. In this action research project, data was collected over several weeks in a second grade classroom to determine whether students more successful with positive or negative reinforcement.

**P. 66. Action research: The effect of gum on student disruptive behaviors**

**Crager** \*Stephanie Orcutt, Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education

Disruptive behaviors are common in any elementary school classroom. This case study looked at the correlation of providing a child with gum before a class period to determine if the gum would reduce the amount of time the student disrupted class with noises. Pre and post intervention data was compared to see if there was improvement.

**P. 67. Action research: Creating fewer distractions in the classroom**

**Crager** \*Rebecca Orr, Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education

Student learning is directly affected by the amount of distractions in the classroom. Creating appropriate seating arrangements is a classroom management skill that has been suggested as a means to decrease the distractions students encounter and create. According to research, the ways in which seating arrangements are used will either increase or decrease the number of disruptions occurring in the classroom. In this action research project, data was collected in a first grade classroom to determine how two different seating arrangements influenced student behavior. The increase or decrease in disruptions was documented to test the hypothesis. The classroom teacher used the results of this action research project to inform classroom practice.

**P. 68. Action research: Reduce off-task behavior in the classroom with back ground music**

**Crager** \*Elizabeth Waymeyer, Kimberly Nettleton, Mentor, Department of Early Childhood, Elementary, and Special Education, College of Education

The study was designed to determine if teachers could reduce the amount of off task behaviors by playing instrumental classical music when students worked independently. Over the course of several weeks, the number of off task behaviors was collected. Data collected both before and after treatment were analyzed and the results were examined to determine if a change in behavior occurred.

**P. 69. Higher education in an era of relevance**

**Crager** \*Megan McKnight, Dr. Timothy L. Simpson, Mentor, Department of Foundational and Graduate Studies in Education, College of Education

According to a recent publication by several prominent higher education organizations, the new “governing principle (of the university) must be relevance to the publics’ they serve.” What does it mean for colleges and universities to be relevant? How relevant should colleges and universities be to society? Should they serve the interests of society or the interests of human flourishing? For example, some argue that colleges and universities should teach 21<sup>st</sup> century skills for the 21<sup>st</sup> century economy, while others argue that they should form a human being with intellectual virtues. Our poster engages these contemporary yet eternal questions facing higher education. This project is sponsored by the Adron Doran Endowment and an MSU Undergraduate Research Fellowship.

**P. 70. 3D technology: Changing the way students learn**

**Crager** \*Emily Bodenlos, Dr. Lesia Lennex, Mentor, Department of Middle Grades and Secondary Education, College of Education

How would you like to tour the pyramids of ancient Egypt without ever leaving your desk? 3D technology is changing the education field. This study focused on whether 3D technology in the classroom increased student interest and knowledge retention during learning. Through research into 3D resources in the classroom, and the use of 3D apps in actual classrooms, it was determined that 3D technology enhances the learning experience for students as well as teachers. With the implementation of 3D apps, projectors, computer software, printers, and more, educators are bridging the gap between fun and learning. The RCPC grant, and an MSU Undergraduate Research Fellowship made this research possible.

**P. 71. A comparative study of classroom literacy practices in Kentucky and New Zealand**

**Crager** \*Kelli Hollenkamp, Dr. Jody Fernandez, Mentor, Department of Middle Grades and Secondary Education, College of Education

The goal of this presentation is to compare classroom literacy practices of Kentucky teachers to the practices of New Zealand teachers and assess the difference they make in the classroom. Does the difference in practice contribute to the fact that New Zealand scores considerably higher than the U.S. in literacy tests? The research was collected during recent observations in Kentucky middle and elementary schools and observations of middle and elementary schools in New Zealand in March and April of 2011. Classrooms were evaluated by their use of literacy and comprehension strategies as well as their overall attitude towards reading. Funding for this project was provided in part by the Collaborative Center for Literacy Development; a MSU Undergraduate Research Fellowships, and Ruth Boggs Shannon & E.L. Shannon Jr., Endowed Professor grant.

**P. 72. Relationship between proximity to regional campuses and ACT scores**

**Crager** \**Megan Brewington, Jodi Blackburn, Mentor, 21<sup>st</sup> Century Education Enterprise, College of Education*

This quantitative research study examines the relationship between proximity to a regional university and district ACT scores. Linear regression was used to analyze the data to identify the relationships among variables. Morehead State University College of Education sponsored this research through the Undergraduate Research Fellowship program.

**P. 73. Why do teachers adopt new technology? A study of the Jackson Independent school system's implementation of teacher websites**

**Crager** \**Allison Johnston, Rebecca Roach, Mentor, 21<sup>st</sup> Century Education Enterprise, College of Education*

The purpose of this study was to examine the factors that may influence teacher adoption of new digital technologies. This topic is significant because today's students rely on technology in daily life more than ever before. 21<sup>st</sup> century careers demand graduates who have mastered skills and knowledge in the use of digital technology. Jackson Independent district teachers voluntarily created websites for their classroom use with assistance from Kentucky Dataseam. This study examines the demographic, cultural, and policy factors that may have influenced this shift to technology. This research was completed with the support of Kentucky Dataseam.

**P. 74. Frequency of iPads in instructional practices of special needs classrooms**

**Crager** \**Brooke Kendall, Jodi Blackburn, Mentor, 21<sup>st</sup> Century Education Enterprise, College of Education*

This quantitative research focuses on teachers of students with special needs who integrated iPads into their instruction. Teachers were surveyed to identify frequency of implementation of iPads. Data were analyzed for content and non-content related subject areas. Morehead State University College of Education sponsored this research through the MSU Undergraduate Research Fellowship program.

**P. 75. The space movie project: Digital movie making for innovative, real world thinking**

**Crager** \**Terri Rose, Rebecca Roach, Mentor, 21<sup>st</sup> Century Education Enterprise, College of Education*

The 21<sup>st</sup> Century Education Enterprise collaborated with the faculty of the College of Science and Technology, MSU Space Science Center, MSU Center for Regional Engagement and Kentucky Dataseam to provide workshops, an online learning community, and ongoing in-school support for 74 students (50% females) from counties in Eastern Kentucky. These students then created digital documentaries on advanced topics in Space Science which they later presented at a film festival hosted at MSU's Digital Star Theatre. This mixed-method study analyzed movie rubric scores to measure impact on students and teachers were conducted to explain the project's impact. The results of this study are significant to their applications toward project-based learning in the classroom.

**P. 76. A survey of the availability of psychological services for law enforcement officers**

**Crager** \*Alex Davis, Dr. Elizabeth Biebel, Mentor, Department of Sociology, Social Work, and Criminology, Caudill College of Arts, Humanities, and Social Sciences

An exploratory survey assessing the availability of psychological services for police officers, their families, and civilian workers was conducted. The largest county, city and all state departments were surveyed. The most utilized counseling services and concerns were calculated. Most agencies used outside mental health providers to service their employees. The most utilized services were critical incident debriefings, and counseling for job stress and personal problems. Most cited concerns when obtaining counseling were: loss of peer respect, confidentiality, job loss, and loss of firearm privileges. While over half of departments surveyed used specific policies to ensure confidentiality, substantial percentages of respondents restricted access to counseling records, while few felt they had firm peer support team expectations of privacy. Study discusses specific research statistics in each area.

**Poster Session II 2:45 – 4:15 p.m. Crager Room**

**P. 1. Evaluating progeny of a ‘vinson watts’ tomato (*Solanum lycopersicum*) and an unknown cherry tomato cross**

**Crager** \*Emily Bucklew, Joshua Riggsby, Dr.C. Brent Rogers and Dr. Debby Johnson, Mentors, Department of Agricultural Sciences, College of Science and Technology

In 2008 cherry tomatoes were found in plots of ‘Vinson Watts’ tomatoes (full-size, pink heirloom). Two plants were discovered to have pink fruit, an unusual trait among cherry cultivars. A field study was conducted to evaluate the progeny of the unplanned cross.

In 2011, field plots were established containing three lines of plants saved from desirable fruit of the 2010 study. The plants were evaluated based on color, flavor, and undesirable characteristics. Taste testing was done subjectively with multiple tasters at four tastings. Visual data on color and observable undesirable qualities were gathered. Uniformity within lines increased compared to 2010.

The best selections will be propagated in subsequent years. The goal is to find a stable pink cherry tomato with taste similar to ‘Vinson Watts’.

**P. 2. The human animal bond and its effects on self-efficacy**

**Crager** \*Kayla Keeton, Dr. Kimberly Peterson, DVM, Mentor, Department of Agricultural Sciences, College of Science and Technology

Youth at Morehead Youth Development Center participate in a regional engagement greyhound dog program aimed at enhancing learning through the human animal bond, preparing youth for animal careers and preparing retired racing greyhounds for life as a pet. Daily journal writings and artwork are evaluated for evidence of self-efficacy and changes in self efficacy over time. Evidence is scored on a scale of 1-3 based on the subject’s belief that they are capable of performing in a certain manner to attain certain goals. The human animal bond experiences during the greyhound program appear to have a positive effect on self-efficacy. This project was made possible by a Center for Regional Engagement Undergraduate Fellowship.

**P. 3. The use of real-time ultrasound and predictive software to estimate carcass yield and quality of fed cattle**

**Crager** \**K. J. Kelly<sup>1</sup>, B. C. Williamson<sup>1</sup>, R. S. Miculinich<sup>1</sup>, C. Hunt<sup>2</sup>, T. J. Wistuba<sup>3</sup>*; Morehead State University, Morehead, KY<sup>1</sup>, Paradox Farms, Ewing, KY<sup>2</sup>, Novus International, Inc., St. Charles, MO<sup>3</sup> Department of Agricultural Sciences, College of Science and Technology

Body measurements for sixty-four crossbred steers and heifers ( $276 \pm 42$  kg) were recorded for rib fat, percent intramuscular fat, and longissimus muscle depth using real-time ultrasound one week prior to transport to a commercial feedyard; predicted carcass composition was estimated. Cattle were harvested when visually appraised to have 1 cm of RF. Carcass parameters were recorded for hot carcass weight, yield grade, and quality grade. Pearson square correlations were used to determine the relationship between predicted carcass measurements, carcass grades, HCW, and performance parameters. Yield grade correlated ( $P < 0.01$ ) with predicted RF. Predicted final BW correlated ( $P < 0.01$ ) with HCW and final BW. Predicted carcass composition correlated with carcass grid values, actual HCW, and final BW. Carcass predictive software may be an effective tool in uniformly marketing cattle. This research was supported by an MSU Undergraduate Research Fellowship.

**P. 4. Initial trends in the Kentucky buck test program**

**Crager** \**Robert S. Kelly, Ben Williamson and Dr. Rebecca Miculinich, Mentors, Department of Agricultural Sciences, College of Science and Technology*

U.S. meat goat producers are emphasizing improvement of growth and carcass traits through selection. As a result of the increased demand for high quality breeding stock, the Kentucky Buck Test Program (KBTP) was initiated by the Kentucky Goat Producers Association and the Kentucky Department of Agriculture in 2005. The objective of this study is to evaluate initial trends in growth and performance characteristics of the Kentucky meat goat population. Results indicate that ADG has increased slightly since 2005, showing a significant difference ( $P < .05$ ) in LSM means between 2005 ADG (.45) and 2010 ADG (.53). Although numerically the LEA LSM means are higher in 2010 than in 2007, no significant difference ( $P > .05$ ) was found between test groups. BF was significantly ( $P < .001$ ) higher in the years 2009 and 2010 compared to 2007. As expected, the correlation between ADG and BF ( $r = .30$ ) and BF and LEA ( $r = -.41$ ) was significant ( $P < .01$ ). Expansion of the dataset to include additional test years is planned.

**P. 5. Real time ultrasound (RTU) body measurement impacts on replacement heifer price: The Eastern Kentucky case**

**Crager** \**Carter Mobley, Dr. Tyler B. Mark and Ben Williamson, Mentors, Department of Agricultural Sciences, College of Science and Technology*

Heifers are typically used to replace approximately 10% to 20% of the cowherd each year. Proper selection decisions play a significant role in the profitability of the operation. Important economic traits of replacement heifers are growth and development. RTU is an effective tool for producers to use to determine body composition traits. Having RTU body measurements done is not a free service and for producers wanting to sell replacement heifers must be able to offset the cost of using RTU. Objectives of this project are to determine the impact of RTU body measurements on the price of replacement heifers and investigate other factors that impact the price of replacement heifers over time. This research was supported by MSU Undergraduate Research Fellowship.

**P. 6. An investigation of the effects and allele frequency distribution of Adipocyte Determination and Differentiation Factor-1 (*ADD1*)**

**Crager** \*Moriah L. Penick, \*L. Ashton Porter, Dr. Rebecca Miculinich, Mentor, Department of Agricultural Sciences, College of Science and Technology

Consumers and many segments of the pork industry continue to demand improvements in the quality of fresh pork products. Previous research has determined that carcass and meat quality traits, such as color, tenderness and flavor, may be improved through marker assisted selection, therefore reducing the need for use of enhancement solutions to improve quality consistency. *ADD1* is a transcription factor believed to play a role in lipid biosynthesis in humans and is involved in the over-expression of certain genes in obese mice. Given the positive correlation between lipid composition and meat quality traits, *ADD1* is considered a promising candidate gene for pork quality. The objectives of this study are to investigate the allele frequency distribution in a variety of breeds and also determine the effect of *ADD1* on traits of economic importance. Genomic DNA was extracted from approximately 500 Berkshire, Duroc, Hampshire, Large White and Landrace pigs that were also highly characterized for carcass quality attributes. Polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) procedures and a statistical association analysis to compare genotype effects on pork quality was completed. Results indicate that *ADD1**TaqI* allele frequencies varied among the breed populations and that *ADD1**TaqI* marker may have potential for use in marker assisted selection for the improvement of quality attributes associated with marbling in fresh pork. Funding for this project was provided by the MSU Undergraduate Research Fellowship and the Ohio State University Department of Animal Sciences.

**P. 7. East Kentucky bioenergy capacity Assessment project**

**Crager** \*Isaac Singer, Kayla Kelly, Carter Mobley, Dr. Tyler B. Mark, Mentor Department of Agricultural Sciences, College of Science and Technology

Kentucky has long been known as an energy producing state, especially coal production. However, economic and political drivers are aggressively seeking sustainable and renewable energy sources to replace the traditional fossil fuels. One of the key impediments to the development of a biomass industry in Kentucky is the creation of infrastructure and the location of potential biomass growers. The objective of this project is to assess the production of biomass produced throughout the state under various pricing scenarios and timeframes. The specific feedstocks investigated are crop residues (e.g. corn stover), forest products, and energy crops (e.g. switchgrass). Once identifying the production of biomass we can begin to think about where to locate processing plants for these products. This research was supported by DOE Grant (EE0003130).

**P. 8. Farmer's willingness to grow biomass for energy production: The Kentucky case**

**Crager** \*Austin P. Jacobs, Dr. Tyler B. Mark, Mentor, Department of Agricultural Sciences, College of Science and Technology

Agricultural producers across Kentucky are going to have to change farming practices to meet 21<sup>st</sup> Century needs. By 2025, Kentucky's goal is to derive 12% of its motor fuels demand of 775 million gallons per year, from biofuels. One area targeted for expansion is the Appalachian region of Kentucky. Biomass has a numerous potential uses in the bioenergy area such as the production of ethanol or burn for heat. The primary focus is assessing the potential producers understanding of biomass production, processing, and willingness to produce. To ascertain the willingness of Kentucky farmers to diversify their operation and include biomass feedstocks in their rotations a survey is used. This research is supported by a CRE New Faculty startup grant.

**P. 9. Development of stable CheY protein mutants for single molecule folding study via intein/maleimide chemistry**

**Crager** \*Kelly Barnett, Prathisha Nalamati, Sagar V. Kathuria, C. Robert Matthews, Department of Biochemistry and Molecular Pharmacology, University of Massachusetts Medical School

Understanding how the native functional structure of proteins develops through the folding process is useful to improve folding models, enhance the stability of proteins and understand protein misfolding-related diseases. The bacterial protein CheY is a model system for studying outstanding questions in protein folding, such as, residual structure in the unfolded state, structure and kinetics of folding intermediates, structure of the transition state and the cooperativity of folding. This study aims to label CheY with two large fluorophores to investigate structural features of the folding states in CheY using FRET. We hypothesize that CheY may be mutated to mediate split-intein/maleimide chemistry while maintaining stability comparable to that of wild-type CheY. The stability of these mutants were analyzed by comparison to wild type CheY via equilibrium titrations and thermal melts monitored by circular dichroism spectrophotometry.

**P. 10. Transcriptome analysis of *Acinetobacter baylyi* ADP1 in response to DNA-damage**

**Crager** \*James Bradley, Dr. Janelle Hare, Mentor, Department of Biology and Chemistry, College of Science and Technology

Organisms have developed response systems to survive DNA damage, such as the “SOS response” that results in the expression of various proteins such as UmuD and UmuC. After DNA damage in *Escherichia coli*, UmuD self-cleaves and binds to UmuC to form polymerase V, which performs translesion synthesis. Previous work indicates that *Acinetobacter baylyi* possesses an uncommon, regulatory umuD allele (umuDab). We used RNA sequencing to analyze the transcription of genes involved in the DNA damage response induced by mitomycin C, a well-documented DNA damaging agent. We have identified genes whose expression is controlled by umuDab as well as characterized genes that exhibit these differential responses to DNA-damage. RT-PCR will be used to confirm this differential response. Funded sources: NIH grants #1R15GM085722-01 and #2P20RR016481-09.

**P. 11. Determining which polymerase causes UV induced mutagenesis of the *rpoB* gene of *Acinetobacter* species**

**Crager** \*Travis Witkowski, Alison Grice, Dr. Janelle Hare, Mentor, Department of Biology and Chemistry, College of Science and Technology

The exposure of bacteria in the *Acinetobacter* genus to UV light results in mutants resistant to rifampin. Studying the types of mutations in the Rif region of these mutants' *rpoB* gene (the region of the gene in which mutations can cause rifampin resistance), can determine whether DNA Polymerase IV or V led to these mutations, as each polymerase displays a characteristic mutation pattern. If a mutation pattern seen in the Rifampin mutants matched polymerase V's mutation signature, it would suggest that the cells had conducted SOS mutagenesis, which requires the error prone polymerase V encoded by the *umuDC* operon. This work was supported by NIH grants 1R15GM085722-01 and 2P20RR016481-09.

**P. 12. Differential gene expression as a biomarker of contaminant exposure**

**Crager** \*Marina Kirtland, Kelly Barnett, Josh Ferrall, Dr. David Peyton, Mentor, Department of Biology and Chemistry, College of Science and Technology

Biomarkers are effective monitoring tools, allowing researchers to detect and understand the biological significance of contamination. We examined the expression of pollutant sensitive genes in hepatic tissue from zebrafish (*Danio rerio*) caged in either a reference area or in effluent or effluent receiving stream water emerging from the Paducah Gaseous Diffusion Plant (Paducah, KY). In addition, resident longear sunfish (*Lepomis megalotis*) and green sunfish (*Lepomis cyanellus*) were collected from both reference and effluent receiving sites for evaluation of hepatic gene expression. None of the genes examined in zebrafish had been previously identified for native sunfish species so in this project we have begun to develop a library of biomarkers for these native fish to be analyzed by real-time PCR.



**P. 13. Microbial source tracking in the Hancock Creek Watershed, Clark County, Kentucky**

**Crager**

**\*Julie Arnold, \*Marisa Kamelgarn, Dr. Geoffrey W. Gearner, Mentor, Department of Biology and Chemistry, College of Science and Technology**

The objective of this study was to determine if fecal contamination in eight selected sampling sites of the Hancock Creek Watershed was of human and/or cattle origin. Polymerase chain reaction was used to detect DNA sequences unique to cattle- and human-specific gastrointestinal bacteria. Eight sites in the Hancock Creek Watershed were sampled in September (wet weather event) and October (dry weather event) 2011. *Escherichia coli* analyses showed that 7/8 sampling sites assessed in September exhibited *E. coli* counts that exceeded the Kentucky Division of Water primary contact recreation limit of 240 CFU/100 mL; whereas all eight samples collected in October were well below the limit. Genetic markers for cattle-associated bacteria were present in 7/8 samples collected in September; while human-associated bacterial genetic markers were found at 2/8 sampling sites. Cattle-associated bacterial genetic markers were present in 6/8 samples collected in October; while human-associated bacterial markers were present in one sample. This project was supported by the Strodes Creek Conservancy through a Kentucky Division of Water 319h grant, and by MSU's Undergraduate Research Fellowship Program.

**P. 14. Preliminary assessment of biodiversity indices using beetles for conservation evaluation**

**Crager**

**\*Rebecca Roberts, Jackie Carder, Dr. Sean O'Keefe, Mentor, Department of Biology and Chemistry, College of Science and Technology**

Biodiversity assessment is the foundation for conservation evaluation. Beetles are an ideal group to use for biodiversity assessments because they are extremely diverse, very abundant, fill numerous ecological roles, and can be assessed quantitatively and qualitatively by many means. The purpose of this preliminary study is to determine which biodiversity indices are the most informative for beetles. Three standardized trapping methods were employed over a 16 day period (10 Aug – 26 Aug 2011) at three sites in the Daniel Boone National Forest. An initial examination of the richness obtained reveals 22 families, 76 genera, and 96 species. Biodiversity analyses included the standard Shannon and Simpson indices, as well as Log series *a*, SHE analysis, and Brillouin index; taxonomic richness and functional diversity are explored. This research was supported in part by an MSU Undergraduate Research Fellowship.

**P. 15. Synthesis of flavanone precursors from a cetophenone derivatives and benzaldehyde derivatives**

**Crager**

**\*Christine DuChane, Dr. Mark Blankenbuehler, Mentor, Department of Biology and Chemistry, College of Science and Technology**

The synthesis of chalcones and flavanone precursors via a mixed aldol condensation was conducted. The synthesis of new pyrazole compounds from chalcones was also investigated. The products of the reactions were characterized using <sup>1</sup>H-NMR, <sup>13</sup>C-NMR, and IR spectroscopy. The purpose of this project was to determine the correct reagents and laboratory conditions in order to synthesize flavanone precursor derivatives without generating the dehydrated chalcone derivatives as well as the discovery of new biologically active pyrazole compounds.

**P. 16. Microwave assisted synthesis of biodiesel**

**Crager**

**\*David Patterson, Dr. Mark Blankenbuehler, Mentor, Department of Biology and Chemistry, College of Science and Technology**

The synthesis of biodiesel can be accomplished by a transesterification reaction between oil, methanol and a base catalyst. This experiment utilized a CEM MARS microwave system as a heat source, used cooking oil from a deep fryer, methanol and 45% KOH. Solutions were added to microwave reaction vessels and reacted under specified reaction conditions. Several additional replicates were produced, as well as variations of the experiment in which 45% KOH was substituted by modified coal ash. Products were analyzed by IR, H-NMR and C-NMR. Reaction time in a microwave was significantly faster than conventional heating on a hot plate.

**P. 17                    Syntheses and studies of organic complexes of metal ions**

**Crager                    \*Whitley Whitehead, \*Taylor Gasser, Dr. Herbert Hedgecock, Mentor, Department of Biology and Chemistry, College of Science and Technology**

Vitamin B<sub>12</sub>, chiral catalyst, hemoglobin, chlorophyll, and Ziegler-Natta polymerization catalysts are a few examples of important metal complexes. We are synthesizing compounds to be used to make organic complexes. Some of these potentially will be chiral, and we will try to use that property in our studies. Schiff bases (imines) are synthesized, characterized, and further reacted to form compounds to be studied. These compounds will be complexed with transition metal ions for further studies.

**P. 18.                    GlioLab: Development of a cubelab platform for international space station based biomedical research**

**Crager                    \*Cara E. DeMoss, \*Will L. Grey, Dr. Massimo Carella and Dr. Angelo Notarangelo, Medical Genetics Unit IRCCS Casa Sollievo della Sofferenza, San Giovanni Rotondo, Italy, Dr. Benjamin K. Malphrus and Chantal Cappelletti, Department of Earth and Space Sciences, and Dr. Darrin L. DeMoss, Mentors, Department of Biology and Chemistry, College of Science and Technology**

Our primary objective is to develop a CubeLab (Gliolab) platform for performing biomedical research on the International Space Station (ISS) while performing preliminary ground-based and flight experimentation (STS-134 and STS-135). The research will utilize Glioblastoma cancer lines as the experimental model for all protocols. Data collected at Johnson Space Center and analyzed at Morehead State University and by our colleagues in Italy are providing insight into Glioblastoma behavior in microgravity, simulated microgravity and gravitational environments that will further drive Gliolab's development. The potential for biomedical research utilizing Gliolab onboard the ISS or space flights will hopefully pave the way for affordable biomedical research in microgravity and yield new terrestrial biomedical applications and treatments. This research was supported by the Morehead State University College of Science and Technology, Undergraduate Research Fellowship Program, Kentucky Space, and the GAUSS-Group of Astrodynamics (University of Roma).

**P. 19.                    Trends in nickel and cobalt leaching from coal combustion by-products from two stoker boilers, present at Morehead State University Heating and Water Treatment Facility, after modernization of the ash handling system**

**Crager                    \*Amanda Sullivan, \*Kathryn Renyer<sup>1</sup>, Dr. Zexia K. Barnes<sup>1</sup>, Dr. Nathan L. Coker<sup>1</sup>, Dr. Ann M. Macintosh<sup>1</sup> and Dr. Jennifer M.K. O'Keefe<sup>2</sup>, Mentors, <sup>1</sup>Department of Biology and Chemistry, <sup>2</sup>Department of Earth and Space Sciences, College of Science and Technology**

The purpose was to assess how nickel and cobalt occur within and leach from coal combustion by-products (CCBs) produced by stoker boilers and begin to quantify the possible risks from CCB use or disposal. CCBs and feed coal were sampled from two stoker boilers, present at the Morehead State University Heating and Water Treatment Facility, after the ash handling system was modernized. Both boilers operate below their efficiency window and utilize the same feed coal. Prior to retrofit, emission controls on the systems consisted of multicyclone dust collectors, as well as a single baghouse. Following modernization, the boilers are operating somewhat closer to peak efficiency and have additional pollution controls, namely three diatomaceous-earth lined baghouses that together remove virtually all particulate matter from the combustion gas stream. CCB's were sampled from multiple points within the systems, including bottom ash, sidestream ash, multicyclone ash, and, where present, baghouse ash. Samples of each ash were shaken for 12 hours in 2% nitric acid to find total leachability. This method was chosen over other methodologies due to the acidity of the local groundwater and lack of results in pilot studies using batch leaching and groundwater leaching techniques. Preliminary results indicate that in terms of ash stability, ashes produced prior to the retrofit have greater total leachability than ashes produced after the retrofit. This work was funded by an USGS NCRDS grant.

**P. 20. Petrography of sized fractions of coal-combustion by-products from stoker boilers**

**Crager** \*Eric Matteson, \*Derek Howard, Dr. Jennifer M.K. O'Keefe, Mentor, Department of Earth and Space Sciences, College of Science and Technology

Six ash samples representing two single-source sampling runs, one from each of the former coal boilers at Morehead State University, were examined. Size fractionation of coal-combustion by-products (CCBs) from stoker boilers was undertaken to determine if the size distributions contained in the samples is the same as that produced by municipal generating stations. Like municipal generating stations, CCBs produced by stokers become increasingly fine through the system. The size fractions and CCB types produced, however, are significantly different. Those produced by MSU tend toward finer particulate matter and overall enrichment in carbon forms. This project was supported in part by an USGS NCRDS grant to Jen O'Keefe and completed during ESS 476-305 during Spring 2012.

**P. 21. Distribution of fungal forms in a middle Eocene coal from Tennessee**

**Crager** \*Luke Schwab, Zachary Barnett, Adam R. Layne, Michaela Howard, Dr. Jennifer M.K. O'Keefe, Mentor, Department of Earth and Space Sciences, College of Science and Technology

As part of the organic petrography and palynology of clay-rich lignite from Weakly Co., TN, the distribution of fungal forms in the coal was examined. Fungi in coal are key indicators of the taphonomy of the deposit, especially in the early stages of coalification. The distribution of mycorrhizal, parasitic, and both early and late saprophytic forms are examined in the context of maceral associations. Forms seen in reflected light are compared to fungal palynomorphs recovered during the palynological investigations, and identified where possible. Work on this project was undertaken as part of ESS 476-005 in Spring 2012 and as part of the URF work of Mr. Layne and Ms. Howard.

**P. 22. Toward a reinterpretation of Jackson Purchase Stratigraphy, a preliminary report**

**Crager** \*Zachary Barnett, Dr. Jennifer M.K. O'Keefe, Mentor, Department of Earth and Space Sciences, College of Science and Technology, and Steven Martin, Mentor, Kentucky Geological Survey, University of Kentucky

The upper-Cretaceous-Cenozoic stratigraphic relationships for the Jackson Purchase region of Kentucky are poorly understood, and many of the unit definitions are based on biostratigraphy, rather than strictly on lithostratigraphy. Upper Cretaceous – middle Eocene sediments in this region consist of gravel, sand, silt, and clay with isolated lignite bodies. These sediments infill the eastern half of the northernmost extent of the Mississippi Embayment, a south-west plunging trough with an axis roughly parallel to the Mississippi river through the Jackson Purchase region of Kentucky. Cretaceous – middle Eocene sediments thicken from northeast to southwest across the region. This study represents a preliminary report of efforts to re-examine the lithostratigraphy in the region using vintage auger hole reports and recovered sediments archived by the Kentucky Geologic Survey. Data from the Paducah East, Paducah West, Melber, Fancy Farm, Dublin, Clinton, and Crutchfield quadrangles have been combined to form a cross-section roughly parallel to but east of the axis of the Mississippi Embayment. Preliminary correlations of lithologic units are presented.

**P. 23. Petrography of the lower and middle peach orchard coal from Magoffin County, Kentucky**

**Crager** \**Jared Harmon, \*Michaela Howard, Dr. Jennifer M.K. O'Keefe, Mentor, Department of Earth and Space Sciences, College of Science and Technology*

The Peach Orchard coal zone occurs in the middle Pennsylvanian (Bolsovian) Breathitt Group in Eastern Kentucky. This coal zone is known to contain fossil charcoal-rich coals. It is poorly documented in the literature, appearing in only two peer-reviewed publications. Column samples of the lower and middle Peach Orchard Coal were collected from the southeastern portion of the Ivyton quadrangle near the source of Puncheon Camp Creek in Magoffin County. The column samples were sub-sampled approximately every five centimeters and the sub-samples crushed and mounted in epoxy as particulate pellets. The pellets were polished to a 0.05 micrometer finish and examined under reflected-light microscopy at 500x magnification. A total of 1000 points were counted for each sample using standard ICCP nomenclature. Work contained in this presentation was completed as part of ESS 476-305 during Spring 2012.

**P. 24. Palynology of a middle eocene lignite, Tennessee**

**Crager** \**Michaela B. Howard, Dr. Jennifer M.K. O'Keefe, Mentor, Department of Earth and Space Sciences, College of Science and Technology*

The palynology of a low-rank, clay-rich lignite from Weakly Co., TN, is being examined. It is thought that this lignite is part of the Claibornian-stage lignite outcrop belt. Samples were processed using the O'Keefe technique (O'Keefe and Eble, 2012 in press), which is designed to optimize recovery from clay-rich lignite samples with a minimum of hazardous chemicals. Overall, the deposit is palynologically similar to known Claibornian-state lignites in Kentucky, especially that studied by O'Keefe (2008). Notably, the spectrum recovered is different from assemblages recovered from clay pits in Tennessee. This is likely due to differences in processing and also the more restricted flora present in peat-producing wetlands. Preliminary results indicate that the deposit is dominated by a *Castanea-Cupuliferoidaepollenites* assemblage, with other tree pollen being common. Ferns are also present, as is an assemblage of fungal spores.

**P. 25. Programming serial-to serial earth station software in WxWidgets**

**Crager** \**Kien T. Dang, Dr. Benjamin K. Malphrus and Kevin Z. Brown, Mentors, Department of Earth and Space Sciences, College of Science and Technology*

Since 1992, WxWidgets has been a powerful toolkit to create cross-platform Graphic User Interface (GUI) software systems. With the contribution of the open-source society, WxWidgets now supports most popular Operating Systems, is available in many programming languages, works with various compilers, and is freely distributed according to the L-GPL (Library General Public License). These are the reasons WxWidgets was selected for the development of a serial-to-serial ground station software system, using C++ and Microsoft Visual Studio 2008. The purpose of this project is to create a software system that can run stably in Windows 7 – 64 bit and have functions for testing satellite equipment and processing data as needed. This research is supported by a MSU Undergraduate Research Fellowship.

**P. 26. Development of the Cosmic X-ray Background Nanosatellite (CXBN) payload**

**Crager** \**Hyoung Sup Lim, Kevin Brown, Dr. Benjamin Malphrus, Dr. Roger McNeil and Garrett Jernigan, Mentors, Department of Earth and Space Sciences, College of Science and Technology*

The Cosmic X-ray Background Nanosatellite (CXBN) is a 2-U cubesat developed by Morehead State University and partners that was designed, built, and tested during the 2011 academic year. CXBN will measure the cosmic X-ray background – relic radiation from the big bang event – while it is on the orbit using a Cadmium Zinc Telluride (CZT) array – developed by Dr. Garrett Jernigan and Black Forest Engineering. The CXBN payload module was built and calibrated at the Morehead State University Space Science Center. This project describes the development of the array supporting electronics and high voltage power supply, along with testing and calibration of the instrument. This research is funded by Morehead State University and Kentucky Space.

**P. 27. Analysis of Millisecond Pulsar J1820+0159**

**Crager** \**Hannah C. Mabry, Jennifer Carter, Rachel Rosen, Dr. Thomas G. Pannuti, Mentor, Department of Earth and Space Sciences, College of Science and Technology*

We present an analysis of radio data for the millisecond pulsar (MSP) J1820+0159, which was discovered through the Pulsar Search Collaboratory in January, 2010, by the Green Bank Telescope (GBT) in Green Bank, WV. Our analysis includes new data obtained for J1810+159 through follow-up observations made with the GBT. As part of our study, we will also describe such characteristics of this MSP as P-Dot, distance and magnetic field strength: we also provide multi-wavelength images of this MSP as well. The sum of this work provides an important contribution to research on this rare type of pulsar.

**P. 28. Development of a LINUX-based Astrophysical Data Analysis System**

**Crager** \**Jason McGinnis, Dr. Jennifer Birriel, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology*

Astrophysical data collected at the ground-based optical observatories of the National Optical Astronomical Observatories (NOAO) can only be analyzed using the Image Reduction and Analysis Facility (or IRAF) developed at the NOAO headquarters. Installing scientific software such as IRAF on a LINUX-based operating system turns out to be quite a bit of a challenge. Installing IRAF in an organized fashion requires a lot of time and patience. Learning to use IRAF and understand its rather powerful functions and calibration routines is an essential precursor to the reduction and subsequent analysis of astrophysical data collected from NOAO instruments. We describe the development of two LINUX-based notebooks that will ultimately be used to analyze optical spectra of supernovae remnants and planetary nebulae.

**P. 29. An x-ray and radio study of the Galactic Supernova Remnant SN 1572**

**Crager** \**Kristin H. Young, Dr. Thomas G. Pannuti, Mentor, Department of Earth and Space Sciences, College of Science and Technology*

We present an X-ray analysis of the Galactic Supernova Remnant (SNR) SN 1572 (also known as Tycho's Supernova) using archival observations (247 kiloseconds of exposure time) from the Chandra X-ray Observatory. At a distance between 2.5 – 3 kiloparsecs away, SN 1572 features both thermal and non-thermal components of radiation. Specifically, this SNR contains synchrotron-emitting filaments along its outer shell in which we have spectrally analyzed. In reducing the data, we have fit the spectra with the SRCUT model to estimate the maximum energies, break frequencies, and half-lives of synchrotron-emitting electrons located at these filaments. Complimentary radio observations of Tycho have been conducted with the MSU's 21-Meter Radio Space Tracking Antenna. In researching Tycho, we hope to gain further understanding of how SNRs accelerate cosmic ray particles. Results from data analysis will be presented.

**P. 30. KySat-2, a collaborative effort toward space science educational outreach throughout the Commonwealth**

**Crager** \**Brandon L. Molton, Twyman Clements, Margaret Powell, Jonathan Fitzpatrick, Michael Glaser-Garbrick, Dr. Benjamin Malphrus, Mentor, Department of Earth and Space Sciences, College of Science and Technology*

Kentucky Space, a collaborative effort between Morehead State University, the University of Kentucky, and the Kentucky Science and Technology Corporation (KSTC) has begun development on KySat-2, a 1-unit CubeSat which will serve as a follow up to KySat-1. KySat-1 sought to further educational opportunities in the field of space science throughout the commonwealth by allowing students to track the spacecraft and downlink data and telemetry with amateur radio equipment. KySat-1 also had the capability to serve as a “bent pipe” repeater allowing students to communicate between schools at great distances by “bouncing” audio and text off the satellite in low Earth orbit. KySat-2 will continue this mission while incorporating new technologies developed by the Morehead State University during the development of the Cosmic X-Ray Background Nanosatellite. Mission objectives for KySat-2 include production of an operational spacecraft on orbit which will serve as an outreach mechanism in STEM areas for K – 12 students, validation of an experimental power management system developed through Kentucky Space, and the recovery of experimental data concerning the effectiveness of chemical solar cell coating against conventional glass coating.

**P. 31. Personality profile in extreme sports: Rock climbing**

**Crager** \**Jaimie Howard, Dr. Jennifer Dearden and Dr. Gina Blunt, Mentors, Department of Health, Wellness, and Human Performance, College of Science and Technology*

Rock climbing is an emerging sport that continues to grow in popularity. By some estimates there may be as many as 500,000 active, regular climbers in America. Understanding the psychological profile of an athlete allows for a better understanding of what motivates the athlete, helps to fine tune training programs, and ultimately improves adherence and performance in the sport. While several studies have assessed personality, state and trait attributes, motivation, and self-efficacy in risk-taking sports, little is known about the psychological profile of rock climbers in particular. This literature review examined the constructs of self-efficacy, risk taking, and sensation seeking and how they relate specifically to rock climbing as a high-risk sport. This research was supported by a MSU Undergraduate Research Fellowship.

**P. 32. Evaluating the Impact of the Healthy Schools Program in Rowan County: A Body Composition Focus**

**Crager** \**Wessly A. Runyon, \*John T. Stone, \*Angel M. Smith, \*Natalie A. Norman, \*Kevin D. James, Dr. Mark Deaton, Mentor, Department of Health, Wellness, and Human Performance, College of Science and Technology*

The purpose of this study is to evaluate the impact of the healthy schools program in Rowan County Elementary Schools based on body mass index levels of each elementary student grades 1-5. Exercise Science students are assisting with the data collection of anthropometric measurements of children in each of the four elementary schools in Rowan County. This is an invited and collaborative effort to measure the impact of the healthy schools program by evaluating body composition levels of children during the 2011-2012 school year. The student research group is visiting each school, setting up equipment, conducting measurements, collecting data and then analyzing it to report back to each school and the district. The societal impact assists with addressing the obesity epidemic that faces the state of Kentucky and the entire nation. IRB approval is documented.

**P. 33. Deep brain stimulation: A “shocking” solution for otherwise untreatable Parkinson’s Disease**

**Crager** \*Erica Cline Goble, \*Brett Horne, \*Jessica Cantrell, Cyndi Y. Gibbs, Mentor, Department of Imaging Sciences, College of Science and Technology

Deep brain stimulation (DBS) is used in the treatment of neurological symptoms associated with several neurological conditions. One prominent neurological disorder is Parkinson’s disease. DBS has proven to be successful in the treatment of patients, thus reducing symptoms associated with Parkinson’s. Prior to advances in technology, many treatments were used to help treat the symptoms associated with the disease. Two common surgeries used for tremor diseases such as Parkinson’s include thalamotomy (complete removal of the thalamus) and pallidotomy (complete removal of the globus pallidus). Both of these surgical procedures can lead to complications including paralysis, loss of vision, or loss of speech. Deep brain stimulation allows for a less invasive approach to treatment. DBS allows for inactivation instead of destruction of these structures.<sup>3</sup> This procedure has opened the doors for patients to take back control of their lives from this debilitating disease. With the help of MRI to provide quality information for planning of the surgery, deep brain stimulation is becoming a cure for the treatment of otherwise untreatable Parkinson’s disease. (poster presented at The Ohio State University Medical Center 8<sup>th</sup> Annual Magnetic Resonance Imaging Seminar , receiving the 3<sup>rd</sup> place award in the poster competition).

**P. 34. Connecting with Autism: Can magnetic resonance finally solve the puzzle?**

**Crager** \*Jordan Kestner, \*Adam May, \*Martin Slone, Cyndi Y. Gibbs, Mentor, Department of Imaging Sciences, College of Science and Technology

Despite the prevalence of autism, it continues to be one of the most enigmatic, ambiguous mental disorders. It affects 1 out of every 110 children in the United States.<sup>6</sup> Unreliable questionnaires and observations are essentially the only tools in practice to diagnose and rank the severity of this disorder. With at least two separate categories to distinguish between whose descriptions are predominantly opinions, these children are not receiving a consistent, timely diagnosis. In order to successfully diagnose and treat these children we must devise a more precise series of tests.

Due to current deficiency in consistent, reliable testing methods, a principal topic of autism research is to establish a more accurate approach to providing families with a definitive diagnosis. Various tests utilizing the superior soft tissue visualization of magnetic resonance imaging (MRI) have shown evidence of structural and physiological changes in autistic individuals. Tractography can be used to determine the presence and severity of autism as part of a structured regiment of observation and MRI scans. This would enable much earlier intervention of disease progression and individualization of treatment methods. Future research should concentrate on employing MRI to create a regiment of tests capable of examining the brain for ASD sooner and with superior accuracy over the present ineffectual methods. MRI can revolutionize the diagnostic process and finally solve the mystery behind the autism puzzle.

**P. 35. AIXELSYD “Moving forward in a backwards world”**

**Crager** \*Dustin Marsh, \*Meredeth Lortie, \*Jessica Adams, Cyndi Y. Gibbs, Mentor, Department of Imaging Sciences, College of Science and Technology

Approximately one in five students or 15-20% of the population in the United States have a language-based learning disability. Dyslexia, being the most common of these disabilities; can affect many aspects of a person’s life. Dyslexia is a complex learning disability that can compromise a person’s ability to read, write, spell, and speak. This disability is believed to be linked to impairment in the brain’s ability to translate images received from the eyes or ears into understandable language. Dyslexia is a very wide spread mental disorder affecting an estimated 10 to 15% of the total population in the United States. Unfortunately, the causes of the disorder are still unclear to researchers at this point. Currently, fMRI studies are being performed to understand how different treatments can impact a dyslexic person. Magnetic resonance imaging has proven to be a valuable resource in aiding of the diagnosis of dyslexia and progression towards a cure for the mental disorder. On the contrary, there is currently no cure for dyslexia, but with early detection and diagnosis the problem can be addressed appropriately, and the person can live a normal life. However, it is important to understand that a dyslexic person will always experience a certain degree of challenge when reading, but many have proven to excel in life's greatest challenges.

(poster presented at The Ohio State University Medical Center 8<sup>th</sup> Annual Magnetic Resonance Imaging Seminar, receiving the 2<sup>nd</sup> place award in the poster competition).

**P. 36. Seize your inner demons: Epilepsy verses demonic possession, utilizing magnetic resonance to settle the age old debate**

**Crager** \*Cody Salyer, \*Kristy Sebastian, \*Kim Peck, \*Aaron Hall, Cyndi Y. Gibbs, Mentor, Department of Imaging Sciences, College of Science and Technology

Ever since the days of the Bible, epileptic seizures and demonic possession have gone hand in hand. With the symptoms of the two being strikingly similar, anyone with religious belief or a taste for horror films could easily label them as the same. In reality, it is a misconception that has continued to grow over the years and can be very offensive to those 50,000,000 people worldwide who suffer from a very serious medical condition (epilepsy).<sup>6</sup> With a stigma so difficult to dispel, it is time to raise awareness and understanding on the topic using the modern advances of magnetic resonance imaging (MRI). Magnetic Resonance Imaging has been proven effective in the detection and treatment of epilepsy by demonstrating where seizures begin, which is evidenced by the presence of scar tissue in the brain. Functional MRI (fMRI) also has its place in imaging and aiding in the diagnosis of epilepsy. A patient is introduced to specific sensory tasks and imaged to visualize blood flow, activity, and function of a part of the brain. This technique can also help show what area of the brain is responsible for the origin of the epileptic seizure. With modern advancement in the medical imaging field, precisely MRI, we can now detect abnormalities in the brain that indicate epilepsy. These treatments demonstrate a reduction in symptoms and in the seizures themselves, thus eliminating the misconception that people with epilepsy suffer from demonic possession.

**P. 37. Comparison of nursing interventions for the prevention of hospital acquired pressure ulcers**

**Crager** \*Jeremy Bach, \*Cassie Farmer, \*Sylvia Hedge, \*Audreanna Helton, \*Lauren Porter, Michelle McClave, MSN, RN, Mentor, Introduction to Nursing Research, Department of Nursing, College of Science and Technology

Hospital acquired pressure ulcers are becoming increasingly problematic in the health care setting. Nursing interventions are essential to the prevention and treatment of pressure ulcers. Additionally, appropriate nursing interventions can promote optimal health status, decreased length of stay, lower costs of care and increased patient satisfaction. The purpose of this study is to compare three clinical sites methods of intervention and treatment of hospital acquired pressure ulcers. This will be accomplished through the utilization of the National Database of Nursing Quality Indicators (NDNQI) to promote the use of Evidence-Based Practice Guidelines in the chosen three clinical sites.

**P. 38. Comparison of a clinical study site health assessment versus recommendations for advanced nursing health assessment**

**Crager** \*Justin Chafin, Christa Bledsoe, Mentor, Advanced Health Assessment, Department of Nursing, College of Science and Technology

One of the many responsibilities of nurses is to carry out thorough assessments on patients under their care. Performing efficient physical assessments are one of many key components of nursing care while caring for patients. Healthcare facilities generally have their own unique assessment protocols to record patient findings gathered by nursing staff. However, physical assessments carried out by nurses may be hindered when facility protocol documentation lacks detail concerning normal and abnormal findings. Vague assessment documents can lead to nurses performing poorly when examining patients considering that their documentation forms lack adequate information for data recording. It is necessary to evaluate the accuracy and efficiency of a facility's documentation to ensure proper assessment and data collection.



**P. 39. Examining nursing documentation in patient care**

**Crager** \*Sylvia Hedge, Christa Bledsoe, Mentor, Advanced Health Assessment, Department of Nursing, College of Science and Technology

Documentation within a patient's medical record is a vital aspect of nursing practice. Nursing documentation must be accurate, comprehensive, and flexible enough to retrieve critical data, maintain continuity of care, track client outcomes, and reflect current standards of nursing practice. There are many different ways of documenting care. Narrative source-oriented and problem oriented charting methods are used, as are focused charting, charting by exception, and computer-assisted documentation. Recommendations from evidenced based literature are established based on deficiencies and attributes of a medical facility documentation tool.

**P. 40. Comparison of strategies of nursing interventions that lead to decreased prevalence of restraint use**

**Crager** \*Erin Hughes, \*Chris Hunt, \*Cody Plank, \*Josh Neace, \*Tomi-Jo Liles, \*Savanna Keeton, Michelle McClave, MSN, RN, Mentor, Introduction to Nursing Research, Department of Nursing, College of Science and Technology

The National Quality Forum has stated that restraint use can have a negative effect on the quality of care the patient receives. This study will examine the effectiveness of nursing interventions in comparison with other clinical agencies and how these practices influence the prevalence of restraint use. Evidence based practice will be examined in this research to identify the most effective interventions used by the different clinical agencies in lowering the prevalence of restraint use.

**P. 41. Combating the association between catheterization and urinary tract infections in the hospital setting**

**Crager** \*Amanda McDaniel, \*Courtney Sawyer, \*Brittany Short, \*Jordan Allard, \*Sheri Brown, Michelle McClave, MSN, RN, Mentor, Introduction to Nursing Research, Department of Nursing, College of Science and Technology

The goal of this poster is to discuss the association of being catheterized in a hospital setting in relation to urinary tract infections. According to the National Database of Nursing Quality Indicators, prevention of urinary tract infections from catheterizations is a high nursing priority and a risk for patient safety. To evaluate the strategies used to combat the association between catheters and urinary tract infections, we looked at three different clinical sites in regards to their individual guidelines, as well as a comparison to evidence based practice as a whole.

**P. 42. Best evidence-based techniques for smoking cessation**

**Crager** \*Amber Miller, \*Kelsie Witham, \*Cariee Fannin, \*Ashley Peterson, \*Chelsea Wagner, \*Megan Smith, Michelle McClave, MSN, RN, Mentor, Introduction to Nursing Research, Department of Nursing, College of Science and Technology

The purpose of this study is to explore various nursing evidence based practices utilized in the education of patients on smoking cessation. We will compare three clinical facilities' methods of interventions for smoking cessation to one another and discuss their attributes and deficiencies. We will then compare these clinical sites to those analyzed from evidence-based, peer-reviewed articles of nursing interventions pertaining to smoking cessation within acute care, medical-surgical patient settings.

**P. 43. Incidence of inpatient falls with injury and methods of prevention**

**Cragger**

**\*Lisa Wallace, \*Noelle Smart, \*Justin Chafin, \*Richard Edwards, \*Hannah Wagner, Michelle McClave, MSN, RN, Mentor, Introduction to Nursing Research, Department of Nursing, College of Science and Technology**

Research indicates that patients' falls are one of the most common adverse events occurring in the inpatient setting. This study will explore the incidence of patient falls with injury and the methods of fall prevention at three different clinical sites that are utilized by baccalaureate nursing students at Morehead State University. We will explore different assessment tools and interventions that are established for patients that are determined to be at a higher risk for falls. The methods used at the three clinical locations will be evaluated and compared to the standards set forth by The Joint Commission.

**P. 44. Crocheting a better understanding of math**

**Cragger**

**\*Abbie Adams, Dr. Tim O'Brien, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

Handi-crafts have been used in recent years to enhance the learning of mathematics. This project will focus on how to use crocheting to demonstrate representations of 3-manifolds and other complex mathematical concepts. Some of the crocheted items to be presented are the Klein bottle and the torus.

**P. 45. Initial Analysis of Energy Usage and Emissions at MSU**

**Cragger**

**\*Amir Ahmadi, Dr. Tyler B. Mark, Mentor, Department of Agricultural Sciences, College of Science and Technology**

In March of 2010, President Andrews' commissioned the creation of the "Green Committee." One of the charges of this committee is to increase awareness of "Green" programs and ideas. This project is designed to investigate energy usage and emissions at MSU. From this initial investigation of the energy and emissions data, we want to identify areas where "Green" changes could be implemented and provide a positive economic benefit to the university and the environment. This research was supported by the Center for Regional Engagement.

**P. 46. Intrusion detection in wireless mobile networks using data mining techniques**

**Cragger**

**\*Joseph Blanton, Dr. Sherif Rashad, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology**

As wireless mobile networks become more prevalent, the need for new, stronger methods of security grows. Due to their lack of physical infrastructure, these networks are much easier to infiltrate, and many older methods of security are no longer satisfactory. The goal of this research is to design and implement new intrusion detection and response techniques for mobile users. This will be accomplished by the design and implementation of new algorithms that aim to improve upon the speed and memory efficiency of current intrusion detection methods used in mobile networks. These techniques will be based on ubiquitous data stream mining and classification techniques. The data mining tool WEKA will also be used to classify different types of data and to compare different data mining techniques.

**P. 47. Morehead State University iPhone application**

**Crager** \**Luke Robinson, Dr. Doug Chatham, and Dr. Scott Wymer, Mentors, Senior Thesis I and II, Department of Mathematics, Computer Science, and Physics, College of Science and Technology*

Research has shown that 70% of all businesses in the United States use some form of mobile application, and 40% of these business reported that the company would have failed without it. Following this trend, colleges have been implementing mobile applications for teacher, student, and commercial use. The creation of the MSU application should create a portable network to relate information such as news, events, class work, or urgent notifications between the students and faculty anywhere and anytime. The application will also highlight the university's academic features and opportunities for the general public viewing. Under the advisement from Dr. Wymer, I will lay out the design for the mobile application.

**P. 48. Location based services for android platforms**

**Crager** \**Chris Estes, Dr. Sherif Rashad, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology*

Location based services are a growing trend with the increased computing power and availability of mobile devices. Due to rising gas prices it has become increasingly important to minimize travel time. Utilizing incremental data mining techniques, GPS services, and Google Maps we are developing an application which creates a pattern based on commonly visited locations and will suggest possible destinations near the user. The use of incremental data mining techniques is important when dealing with mobile devices due to limited storage for large data bases. This application will help simplify everyday decisions for the end user. This research was supported by a MSU Undergraduate Research Fellowship.

**P. 49. Novel load balancing techniques for wireless heterogeneous networks**

**Crager** \**Benjamin D. Caldwell, Dr. Sherif S. Rashad, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology*

One of the most promising approaches to next-generation wireless technologies is an interworking network of the wireless cellular networks and wireless local area networks (WLAN). In this integrated network, data and resources can be sent and received easily and efficiently, as each of the individual component networks can handle different portions of the data. However, maintaining the efficiency of this network requires very specific methods for balancing the load of data and distributing it appropriately across the component networks. In this on-going project, we are using data mining techniques to analyze the data from communications networks to generate load models that will be generated periodically in an effort to find the best possible ways to manage data traffic in integrated networks.

**P. 50. Designing and implementing parallel data mining algorithms**

**Crager** \**Chris Estes, Dr. Sherif Rashad, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology*

Data mining techniques are used in many different types of software and developers are constantly seeking faster and more efficient algorithms. While many sequential algorithms have been developed and modified, the time complexity of data mining algorithms can still become a problem when dealing with large data sets. One method for combating this problem is through the use of parallel computing, however it is first necessary to adapt existing algorithms to be used in parallel or to develop new algorithms specifically for parallel environments. In this project we look at modifying existing algorithms to work in parallel, starting with the K-Means Clustering algorithm. We discuss our methods for data and task parallelism with this algorithm.

**P. 51. Egyptian fraction representations of one with prime denominators**

**Crager** \*William Chad Muncy, Dr. Rus May, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology

Projects have been done in the past that deal with the representation of one using Egyptian fractions with both odd and even denominators or just odd denominators. This presentation will show the representation of one using prime denominators of Egyptian fractions. The history of Egyptian fractions will be discussed along with the mathematics used to discover which prime denominators do have a sum of one. Also, the importance of using Egyptian fractions in the present era will be covered.

**P. 52. HyperNEAT chess**

**Crager** \*Joshua Bradley, Dr. Sherif Rashad, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology

We discuss the application of a new neuroevolution algorithm, called Neuroevolution of Augmenting Topologies (NEAT), as an artificial intelligent engine for the game of chess. We explain the benefits of using a Hypercube-based encoding scheme and how it can improve performance. Current work and results toward the creation and implementation of a distributed version of NEAT will also be presented.

**P. 53. Lattice models for the lorentz gas**

**Crager** Angela Collier, Dr. R. Duane Skaggs and Dr. Doug Chatham, Mentors, Department of Mathematics, Computer Science, and Physics, College of Science and Technology

A Lorentz gas is a system of small particles moving in an environment containing stationary obstacles. Our research primarily focuses on the stochastic motion of a single particle with two specific types of obstacles. The Lorentz gas problem has application in plasma physics, acoustics, electronics, and many others. This research was completed as part of PHYS 499C and PHYS 499D.

**P. 54. Converting an old digital camera to detect infrared radiation: Preliminary results and future projects**

**Crager** \*Bryan A. Conn, Dr. Jennifer Birriel, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology

With the rapid advance of camera technology over the past decade, many people have old, unwanted digital cameras. It turns out, however, that your old 4, 6, or 8 mega-pixel camera is likely to be able to detect infrared radiation! The charged-coupled device, or CCD, inside of the camera is what allows the camera produce an image. A CCD is sensitive to visible light as well as near infrared light but the camera company has installed an infrared filter to block the infrared light from saturating the chip. Without the infrared blocking filter your pictures would be produced with unwanted colors. By removing this filter your old digital camera will now detect infrared light from 700 to 900 nanometers! We adapted an old Kodak Easy-Share camera and use it to examine the infrared radiation from everyday objects. We discuss the conversion procedure, preliminary results and future projects. This research is supported by the MSU Undergraduate Research Fellowship program.

**P. 55. Approaching the N+K-Queens problem through composition of solutions**

**Crager** \**William M. Holbrook II, Dr. Robin Blankenship, Dr. Doug Chatham, and Dr. R. Duane Skaggs, Mentors, Department of Mathematics, Computer Science, and Physics, College of Science and Technology*

The  $n+k$ -Queens Problem asks for placing  $n+k$  Queens and  $k$  Pawns on an  $n \times n$  chessboard so that no two Queens attack each other. It has been proven that the problem has a solution when  $n > \max\{87+k, 25k\}$ . In an attempt to obtain nice patterns and lower this bound on  $n$ , we have looked at composing solutions and partial solutions for smaller values of  $n$  to obtain solutions for larger values of  $n$ . This research was supported by a MSU Undergraduate Research Fellowship.

**P. 56. Upper bounds on crossing numbers of knots in radius 2 hextile knot mosaics**

**Crager** \**Michael Jason McCord, Dr. Robin Blankenship, Mentor, Capstone, Department of Mathematics, Computer Science, and Physics, College of Science and Technology*

Lomonaco and Kauffman's investigation of characteristics and classifications of knots developed in square tile mosaics inspired the study of hexagon knot mosaics. This project investigates the maximum number of crossings that a member of various families of knots can have and still fit in a radius 2 hexagon knot mosaic.

**P. 57. Morphine withdrawal disrupts motivation: Opiate-dopamine interaction**

**Crager** \**Jordan L. Chapman, Dr. Ilsun M. White, Mentor, Department of Psychology, College of Science and Technology*

Morphine suppresses the brain via mu receptors. We examined morphine effects on simple learning. Rats were trained on a simple task, which required 5 lever-presses for a food-pellet, then received morphine or saline injection. Acute morphine effects were measured every two hours for 3 sessions. Withdrawal effects were tested 24 hours post-injection. During the acute phase, morphine mildly affected response latency and runtime, whereas during the withdrawal phase, response latency and runtime were increased, compared to controls. Food consumption was not affected in either condition. Acute morphine may induce mild behavioral excitation via mu receptors on inhibitory GABA interneurons, leading to dopamine increase. Increased response latency and runtime during withdrawal may reflect changes in motivation, without affecting consummatory behavior. Currently, opiate-dopamine interaction is being examined.

**P. 58. Acute alcohol effects on simple learning in rats**

**Crager** \**Gianni P. Maione, Dr. Ilsun M. White, Mentor, Department of Psychology, College of Science and Technology*

Previously, we reported that alcohol during adolescence disrupts learning in adulthood. We examined acute alcohol effects on simple learning in adult rats. Rats were trained on a fixed ratio schedule, and received alcohol (0.5-1g/kg) or saline. Alcohol increased the latency of the first lever-press in each trial, in a dose-dependent manner. Runtime, which is the time to complete five lever-presses, was affected by a high dose only. The total number of lever-presses or food consumption in each session was not affected by alcohol. Our results suggest that in simple learning task, alcohol-induced deficits are associated with initiation of goal-directed response, rather than appetitive or consummatory behavior. Supported by a MSU Undergraduate Research Fellowship.

**P. 59. 2012 Brain Awareness Project: Visits to high schools and senior centers in Eastern Kentucky**

**Crager** *Sarah-Lee Schoenhagen, Katy Hauris, \*Josh Stephens, Shawna McPherson, Amberleigh Slone, Dr. Ilsun M. White and Dr. Wesley White, Mentors, Department of Psychology, College of Science and Technology*

Since 2002, the scope of our regional brain awareness project (BAP) has been a year-round venture, focusing on community outreach through lectures, presentations, and dissemination of science information. This year, our project included visits to high schools (9-12th) in 7 counties and several senior homes. Similar to previous years, the activity involved lectures on the effects of alcohol and drugs on the brain, distribution of educational materials, and presentation of ongoing research in the Behavioral Neuroscience Laboratory. This project has enhanced the interest of high school students in brain research and senior citizens in our region. Supported by Dana Foundation, Society for Neuroscience, and the National Institute of Health.

**P. 60. 2012 Regional Brain Drawing Contest**

**Crager** *Katy Hauris, Sarah-Lee Schoenhagen, \*Jordan Chapman, Danielle Myers, Paul-Henry Schoenhagen, Josh Stephens, Gianni Maione, Jeremy Bach, Rebecca Baker, Dr. Ilsun M. White, Mentor, Department of Psychology, College of Science and Technology*

The Regional Brain Drawing Contest is a part of the Brain Awareness Program (BAP), which aims to enhance brain awareness to students in our community. The theme of drawings was specific: K-1<sup>st</sup> grade drawings explained how their brain helps them, 2<sup>nd</sup>-4<sup>th</sup> grade focused on how their brain is special, 5<sup>th</sup>-6<sup>th</sup> grade drawings emphasized brain fitness, 7<sup>th</sup>-8<sup>th</sup> grade students compared their brain to objects. This year, over 500 entries were received. Judging criteria were based on originality, scientific accuracy, and overall design. Preliminary judging was done by student judges. Award judging was done by an 8 judge panel, including faculty members and community representatives. This event was sponsored by Center for Regional Engagement at MSU, Rowan County Board of Education, Dana Foundation, and Society for Neuroscience.

**P. 61. Memory recollection and anticipated interactions**

**Crager** *\*Justin M. Hargett, Dr. David A. Butz, Mentor, Department of Psychology, College of Science and Technology*

In the current study we examine the role of memories in same-race and interracial interactions. Participants were randomly assigned to recall memories for same-race or interracial interactions and were then led to anticipate a same-race or interracial interaction in the laboratory. Prior to the anticipated interaction, participants reported their emotions, expectations, and intentions regarding the upcoming interaction. Analysis of the pleasantness of memories revealed no differences between memories for same-race and interracial interactions. However, when recalling memories for interracial interactions, participants exhibited more positive responses when anticipating a black compared to a white partner. In contrast, when recalling same-race memories, responses to the interaction did not vary as a function of the partner's race. This research was supported by the MSU Undergraduate Research Fellowship Program.

**P. 62. White knight and Cinderella ideals: Implications for romantic relationships**

**Crager**

**\*Sydney Howard, Dr. David A. Butz, Mentor, Department of Psychology, College of Science and Technology**

Idealizing romantic partners can have a number of positive implications for relationships (e.g., Murray, Holmes, & Griffin, 1996). The current study expanded upon prior work to examine implications based on these ideals. Participants from across the United States rated their perceptions, ideals for relationship partners, and various relationship aspects via Amazon's MTurk. Among males and females, idealizing partners was associated with increased commitment to the relationship. Additionally, females perceived male partners as discrepant from their "White Knight" ideals. In contrast, although males perceived female partners as living up to "Cinderella" ideals, the gap between ideals for partners and perceptions of female romantic partners increased with age. Results are discussed in terms of their implications for providing insight into the role of ideals in romantic relationships. This research was supported by the MSU Graduate Assistance Program.

**P. 63. Emotion-regulation skills among children with low- and high-risk attachment patterns**

**Crager**

**\*Shelby House, Kristina Schoo, Jin Qu, Tina Ward, Dr. Sheri Kidwell, Mentor, Department of Psychology, College of Science and Technology**

Emotion skills are central in children's positive development, and are believed to depend largely on their relationships with caregivers. The aim of the current study was to investigate the association of child attachment and emotion-regulation strategies. Fifty-four families participated when the children were four years old, completing the Strange-Situation (Ainsworth, Blehar, & Waters, 1978). Emotion-regulation was measured when the children were four and six years old via an interview developed for this study. Six years later a more advanced emotions interview (based on Gottman, Katz, Fainsilber & Hooven, 1997) was used. Ratings at age 12 have been completed for sixteen families thus far. Preliminary data suggests child attachment is consistently related to emotional competence. This research was supported by MSU RCPC and KY NSF grants.

**P. 64. Attachment predicts parent-child relationship quality in early adolescence**

**Crager**

**Dandan Li, \*Stephanie Burns, Leah Smith, Kayla Sizemore, Ashley Powell, Dr. Shari Kidwell, Mentor, Department of Psychology, College of Science and Technology**

Sensitive caregiving has been shown to predict children's attachment. The aim of this study was to explore whether child attachment would be associated with how parents talked about their early adolescents. Fifty-four families participated when the children were four years of age, completing the Strange-Situation (Ainsworth, Blehar, & Waters, 1978). Attachment was classified using Crittenden's (2004) preschooler coding system. Sensitivity was measured eight years later with the Five-Minute Speech Sample and coded with published parameters (Jacobsen, Hibbs, Zigenhain, 2000). Ratings have been completed for 15 families that participated in the follow-up. Preliminary data suggests that securely attached at age 4 had parents who talked about them more positively at age 12. This research was supported by MSU RCPC and NSF KY EPSCoR grants.

**P. 65. The impact of malingering on the Connors 3 Attention Deficit/Hyperactivity Disorder Scales**

**Crager** \*Shawna McPherson, James Messer, Dr. Sean Reilley, Mentor, Department of Psychology, College of Science and Technology

AD/HD is one of the most common childhood developmental disorders. It can consist of hyperactive behavior, the inability to pay attention, or a combination. The increased publicity of AD/HD in the media and the frequent use of stimulant medication for treatment of AD/HD, had led to concerns about parental malingering of a child's AD/HD symptoms for secondary gain. Research has shown that attention rating scales are especially vulnerable to malingering AD/HD. However, few parent reporting scales for AD/HD include any validity scales to evaluate for over-reporting or malingered AD/HD. This study is the first to evaluate the susceptibility of the newest version of the widely used Connors AD/HD Scales, the Connors 3. Using a simulation design, college adults played the role of a parent and were randomly assigned to report on a fictitious child vignette or to falsely report the child's behavior as suggestive of AD/HD. The positive study findings are discussed in regards to evidence-based child AD/HD assessment. Research supported by a MSU Undergraduate Research Fellowship.

**P. 66. Initial evaluation of the susceptibility of the BRIEF-A to malingered AD/HD**

**Crager** \*Nolan Williams, Andrea Williams, Dr. Sean Reilley, Mentor, Department of Psychology, College of Science and Technology

The ability of the Behavior Rating Inventory of Executive Functioning – Adult Version Form (BRIEF-A) to discriminate between malingered AD/HD and honest responding adults was evaluated using a simulation malingering design. Forty participants without a history of AD/HD received an AD/HD or control knowledge enhancement and were randomly assigned to malingering AD/HD or respond honestly on a BRIEF-A and AD/HD ratings scales. The positive study findings are discussed in regards to evidence-based adult AD/HD assessment. Research supported by a MSU Honors Undergraduate Research Fellowship.

**P. 67. Parent and children's emotions as predictors of children's adjustment**

**Crager** \*Amberleigh Slone, \*Amanda Finch, Jin Qu, Shelby House, Jacob Burress, Dr. Shari Kidwell, Mentor, Department of Psychology, College of Science and Technology

Emotion skills are believed to be an important predictor of children's adjustment. The current study aimed to explore the connections between children's emotional experiences and their adjustment. Sixteen families participated in the study when the children were twelve years of age. The Child Behavior Checklist (Achenbach & Rescorla, 2001), a parent questionnaire, was used to determine children's internalizing (i.e., sad/anxious) and externalizing (i.e., oppositional) symptoms. An interview (based on Gottman, Katz, Fainsilber & Hooven, 1997) was used to assess emotional functioning. Preliminary data suggests that more negative emotions in children are associated with greater internalizing symptoms. Additional findings suggest more negative emotions in parents are associated with greater externalizing symptoms in children. This research was supported by MSU RCPC and KY NSF grants.

**P. 68. Attachment as a predictor of children's self-concept**

**Crager** Jin Qu, \*Samantha Spencer, Cory Ruffing, Medina Jackson, Dr. Shari Kidwell, Mentor, Department of Psychology, College of Science and Technology

Self-Concept is defined as a composite view of oneself. The importance of early attachment figures is especially important in the development of children's self-concept. This study aimed to explore the relationship between child-attachment at age four and their self-concept at age six and twelve. Fifty-four families participated when the children were four, completing the Strange-Situation procedure (Ainsworth, Blehar, & Waters, 1978). Attachment was classified using Crittenden's (2004) preschooler coding system. Children participated at age six in a puppet interview measuring self-concept. Six years later self-concept was measured via a self-report questionnaire (Piers, Harris, & Herzberg, 2002). Preliminary findings suggest that attachment patterns at age four meaningfully predict self-concept at age six and age twelve. This research was supported by MSU RCPC and KY NSF grants.



**P. 69. Differential associations of shame and guilt to coping strategies and interpersonal problems**

**Crager** \**Lauren Young, Dr. David R. Olson, Mentor, Department of Psychology, College of Science and Technology*

Recently, it has been suggested that relative to guilt, shame is more strongly associated with various forms of maladjustment. The current study explored the differential relationships of these self-conscious affects to relational difficulties and coping strategies. One hundred twenty five men and women completed measures of shame- and guilt-proneness, interpersonal problems, and coping strategies. In order to determine the unique association between shame and guilt and the other constructs, partial correlations were conducted for each affect. The findings suggest that shame-prone persons are more likely to engage in less effective strategies, such as behavioral disengagement, and less likely to engage in coping strategies which can be productive, such as planning. Guilt-prone persons are more likely to use constructive strategies such as positive reinterpretation. In addition, shame-prone persons reported difficulties behaving sociably and assertively with others, while guilt-prone individuals indicated problems being overly-responsible for others.

**P. 70. Child attachment and its association with parental insightfulness in early adolescence**

**Crager** \**Emily Wilson, \*Bethany Greene, Jacob Burrell, Katelyn Fugate, Ryan Jones, Dr. Shari Kidwell, Mentor, Department of Psychology, College of Science and Technology*

A central element of sensitive caregiving involves taking into account children's feelings and underlying motives. The aim of this study was to explore parental insightfulness and its association with child attachment. Fifty-four families participated when the children were four years of age, completing the Strange-Situation (Ainsworth, Blehar, and Walters, 1978). Attachment was classified using Crittenden's (2004) preschooler coding system. Levels of parental insightfulness were measured via an interview (Oppenheim, Koren-Karie, Sagi, 2001) eight years later. Ratings of insightfulness have been completed for nine families that participated in the follow-up study thus far. Preliminary data suggests that greater levels of parental insightfulness at age 12 were found among children securely attached at age 4. This research was supported by MSU RCPC and NSF KY EPSCoR grants.

**P. 71. Discovering significant mobile patterns from cell towers**

**Crager** \**Joshua Bradley, Dr. Sherif Rashad, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology*

With the advent of the 4G network and increased mobile traffic, it is imperative that novel network models be used which exploit the topological factors often occurring within our communication networks. We introduce the idea of ranking cell towers via combinatorial Hodge Theory for the prediction of high-volume traffic paths and patterns we believe are inherent in cellular traffic data throughout different time periods of the day. Modeling mobile user's movements in a network as edge flows in a graph, we are able to unravel ranking information from each edge to determine whether or not a global ranking of the traversed path is significant for a particular time period with respect to the overall network behavior. This research was supported by a MSU Undergraduate Research Fellowship.

**P. 72. Loss functions in actuarial science theory**

**Crager** \**Michelle Heflin, Dr. Michael Dobranski, Mentor, Department of Mathematics, Computer Science, and Physics, College of Science and Technology*

One portion of Actuarial Science Theory is the loss function, which is used to model benefits paid over premiums. In this study, data was gathered and observed for different types of insurance with an emphasis on earthquake insurance. This data was compiled and formed into loss functions which display if the customers are paying a fair amount for their insurance.

## 2011-2012

# Recipients of Undergraduate Research Fellowships

Morehead State University supports the initiative for students to engage in research, scholarship, performance activities and creative works. Listed below are the 2011-2012 awardees and their mentors.

### COLLEGE OF BUSINESS

<b>Student URF</b>	<b>Class</b>	<b>Department</b>	<b>Mentor (s)</b>
Jennifer Wells	Jr.	AEF	Janet Ratliff
*Matthew Wells	Sr.	AEF	Janet Ratliff
*Victoria Adkins	Jr.	IRAPP	Timothy Hare/ Peggy Jones
*Autumn Baker	Jr.	GOVT/RA	Michael Hail
Kyle Barker	Sr.	GOVT/RA	Stephen Lange
*Johnathon Dye	So.	GOVT/RA	Jonathan Pidluzny
*Kaci Foster	Sr.	GOVT/RA	Michael Hail
*James Galbreath	Jr.	GOVT/RA	Jonathan Pidluzny
*Zachary Golleher	Sr.	GOVT/RA	William Green
*Cody Murphy	So.	GOVT/RA	Murray Bessette
*Laura Pfalzer	So.	GOVT/RA	Murray Bessette
*Ashley Ruggiero	Jr.	GOVT/RA	Michael Hail
Clay Skaggs	Fr.	GOVT/RA	Jonathan Pidluzny
*Lauren VanHook	Sr.	GOVT/RA	James Masterson
*Yen Tran	Fr.	GOVT/RA	James Masterson
*Evelt Wilks	Fr.	GOVG/RA	Jonathan Pidluzny
*Nicholas Mason	So.	MMGT/MKT	Steve Chen

### COLLEGE OF EDUCATION

<b>Student URF</b>	<b>Class</b>	<b>Department</b>	<b>Mentor (s)</b>
*Megan Brewington	So.	21 <sup>st</sup> CENT	Jodi Blackburn
Allison Johnston	So.	21 <sup>st</sup> CENT	Rebecca Roach
*Brooke Kendall	So.	21 <sup>st</sup> CENT	Jodi Blackburn
*Terri Rose	So.	21 <sup>st</sup> CENT	Rebecca Roach
*Katerina Chalk	So.	ECESE	Kim Nettleton/ Mee-Ryoung Shon
*Suzannah Chapman	Sr.	ECESE	Sarah Hawkins
*Amy Clausen	So.	ECESE	Sarah Hawkins
*Rachel Bender	So.	ECESE	Kim Nettleton
*Stephanie Gebka	So.	ECESE	Kim Nettleton
*Alicia Rigdon	Sr.	ECESE	Jane Arrington
*Megan McKnight	Sr.	FGSE	Tim Simpson
*Kelli Hollenkamp	So.	MGSE	Jody Fernandez
*Emily Bodenlos	So.	MGSE	Lesia Lennex

### CAUDILL COLLEGE OF HUMANITIES

<b>Student URF</b>	<b>Class</b>	<b>Department</b>	<b>Mentor (s)</b>
*Aspen Grender	Fr.	A&D	Seth Green
*Elizabeth Dunnavan	Sr.	A&D	Jean Petsch
*Travis Hall	Sr.	A&D	Joy Gritton
*Julie Haymond	Jr.	A&D	Joy Gritton
*Emily Jackson	Sr.	A&D	Joy Gritton

*Susannah Klooster	Jr.	A&D	Joy Gritton
*Calie Morgan	Fr.	A&D	Seth Green
Susan Perry	Jr.	A&D	Seth Green
*Annie Peterson	So.	A&D	Jennifer Reis
*Carly Saunders	Fr.	A&D	Jennifer Reis
*Kayla Sheppard	Sr.	A&D	Joy Gritton
*John Hardy Breeding	Jr.	CMLS	Ann Andaloro
*Katlyn Comley	Jr.	CMLS	Janet McCoy
*Caitlin Farhat	So.	CMLS	Janet McCoy
Kendyl Siebart	Fr.	CMLS	Ritta Abell
*Zhanna McDole	So.	CMLS	Janet McCoy
*Hailley White	So.	CMLS	Janet McCoy
*Caitlin Lacey	Jr.	ENG	Kathryn Mincey
*Isaac Casto	Sr.	HPRLS	Christina Conroy
*Brad Miller	Jr.	HPRLS	Adrian Mandzy
*Jonathan Modaff	Sr.	HPRLS	Wendell O'Brien
Faith Brown	So.	IIS	Philip Krummrich
*Kayla Burton	So.	IIS	Philip Krummrich
*Devauna Young Bolar	So.	IIS	Ric Caric
*Jessica Arnett	Sr.	MTD	Lisa Morse
*Amanda Brown	Sr.	MTD	Lori Baruth
*Justin Croushore	Sr.	MTD	William Mann
*Adam Dixon	So.	MTD	William Mann
*Ann Francis	Sr.	MTD	Jennifer Brimson
*John Handshoe	Sr.	MTD	Stacy Baker/ William Mann
*David Jump	Jr.	MTD	Susan Creasap/ Gordon Towell
*Gregory Tyler Kline	Jr.	MTD	Deborah Eastwood
Julie Morris	Jr.	MTD	Jennifer Brimson
*Michael Pinkston	Sr.	MTD	William Mann
*Emily Shaw	Sr.	MTD	Denise Watkins
*Ranko Shimizu	Jr.	MTD	Deborah Eastwood
John Siedenberg II	Jr.	MTD	Lisa Morse
*Alex Davis	So.	SSWC	Elizabeth Biebel
*Danielle Story	Jr.	SSWC	Bernadette Barton/ Connie Hardesty
*Sonja Pennington	Jr.	SSWC	Paul Steele
Amber Travis	Fr.	SSWC	Elizabeth Biebel
*Sarah Johnson	Jr.	SSWC	Lisa Shannon
*Hannah Willis	So.	SSWC	Rebecca Katz

#### COLLEGE OF SCIENCE AND TECHNOLOGY

<b>Student URF</b>	<b>Class</b>	<b>Department</b>	<b>Mentor (s)</b>
Justine Griesenauer	So.	AGR	Kimberly Peterson
*Moriah Penick	Sr.	AGR	Rebecca Miculinich
*Carter Mobley	So.	AGR	Tyler Mark
Kelsey Culp	So.	AGR	Tyler Mark
*Kayla Kelly	Jr.	AGR	Tyler Mark
Kyle Bush	Jr.	AGR	Tyler Mark
Blake Sims	Jr.	AGR	Tyler Mark
*Issac Singer	Sr.	AGR	Tyler Mark
Keith Centers	Jr.	AGR	Tyler Mark

Andrew Sorrell	Sr.	AGR	Tyler Mark
Courtney Vance	Jr.	AGR	Tammy Platt
*Amariah Belcher	So.	AET	Nilesh Joshi
*Brandon White	Sr.	AET	Hans Chapman
*Julie Arnold	Sr.	BIOL/CHEM	Geoffrey Gearner
Sofeia Aslam	Jr.	BIOL/CHEM	Doug Dennis
*Kate Bomar	Jr.	BIOL/CHEM	Allen Risk
*James Bradley	Sr.	BIOL/CHEM	Janelle Hare
Alexia Callihan	Sr.	BIOL/CHEM	Allen Risk
Michael Cantrell	So.	BIOL/CHEM	Nathan Coker
*Jackie Carder	Jr.	BIOL/CHEM	Sean O'Keefe
*Allie Caudill	So.	BIOL/CHEM	Allen Risk
Heidi Ciccarelli	So.	BIOL/CHEM	Allen Risk
*Erica Eldridge	Sr.	BIOL/CHEM	Allen Risk
*Taylor Gasser	So.	BIOL/CHEM	Herb Hedgecock
Ross Healy	Sr.	BIOL/CHEM	Allen Risk
*Marisa Kamelgarn	Jr.	BIOL/CHEM	Geoffrey Gearner
*Marina Kirtland	So.	BIOL/CHEM	David Peyton
Kasandra Lambert	Jr.	BIOL/CHEM	Janelle Hare
Jessica Lemley	So.	BIOL/CHEM	David Smith
Sarah McClanahan		BIOL/CHEM	Michael Fultz
*Russell Miller	So.	BIOL/CHEM	Allen Risk
Ryan Miller	So.	BIOL/CHEM	David Smith
*Lacee Pyles	So.	BIOL/CHEM	Allen Risk
*Kathryn Renyer	So.	BIOL/CHEM	Ann Macintosh
Kasey Reed	So.	BIOL/CHEM	Geoffrey Gearner
*Rebecca Roberts	Jr.	BIOL/CHEM	Sean O'Keefe
Tiffany Stacy	Sr.	BIOL/CHEM	Douglas Dennis
Washburn, Brooke	So.	BIOL/CHEM	Brian Reeder
*Whitley Whitehead	So.	BIOL/CHEM	Herb Hedgecock
Natasha Whitt	Fr.	BIOL/CHEM	Geoffrey Gearner
*Kien Dang	So.	EaSS	Robert Twiggs
*Cara DeMoss	Jr.	EaSS	Ben Malphrus
*William Grey	Jr.	EaSS	Ben Malphrus
*Jordan Healea	So.	EaSS	Robert Twiggs
*Michaela Howard	Sr.	EaSS	Jen O'Keefe
Julia Kendrick	Jr.	EaSS	Robert Twiggs
*Adam Layne	Sr.	EaSS	Jen O'Keefe
*Larry Tackett	Sr.	EaSS	Charles Mason
*Hannah Mabry	Fr.	EaSS	Thomas Pannuti
*Jaime Howard	Sr.	HWHP	Gina Blunt/ Jennifer Dearden
*Amir Ahmadi	Sr.	MCSP	Michael Dobranski/ Tyler Mark
*Joseph Blanton	Jr.	MCSP	Sherif Rashad
Evan Boyd	Sr.	MCSP	Chris Schroeder
Lauren May	Sr.	MCSP	R. Douglas Chatham
*Joshua Bradley	Sr.	MCSP	Sherif Rashad
*Benjamin Caldwell	So.	MCSP	Sherif Rashad
*Angela Collier	Sr.	MCSP	R. Duane Skaggs
*Bryan Conn	So.	MCSP	Jennifer Birriel
*Jorge Chang	Fr.	MCSP	R. Douglas Chatham
*Christopher Estes	Jr.	MCSP	Sherif Rashad

John Hargett	Fr.	MCSP	Sherif Rashad
*Logan Higginbotham	So.	MCSP	Tim O'Brien
Erich Hohenstein	So.	MCSP	Sherif Rashad
*William Holbrook II	So.	MCSP	Robin Blankenship/ Doug Chatham
			R. Duane Skaggs
*Ronnie Howard	Jr.	MCSP	Russell May
*Julie Lang	Sr.	MCSP	Dora Ahmadi
James Little	Jr.	MCSP	Jennifer Birriel
*Jason McGinnis	Jr.	MCSP	Jennifer Birriel
M. Blake Nickell	Sr.	MCSP	Robin Blankenship/ Doug Chatham
			R. Duane Skaggs
William Parker	So.	MCSP	Russell May
*Trenton Peterman	So.	MCSP	Kent Price
*Biswas Sharma	Fr.	MCSP	Robin Blankenship/ R. Duane Skaggs
			Doug Chatham
Kelsey Whitaker	Sr.	MCSP	Jennifer Birriel
Krystal Williams	Fr.	MCSP	Robin Blankenship
Shelby Branam	So.	NUR	Michelle McClave
*Aaron Ellis	Sr.	PSY	J. T. Blackledge
*Jordan Chapman	Fr.	PSY	Ilsun White
*Justin Hargett	So.	PSY	David Butz
*Shelby House	So.	PSY	Shari Kidwell
Chassidy Ison	Sr.	PSY	David Butz
*Gianni Maione	Jr.	PSY	Ilsun White
*Shawn McPherson	So.	PSY	Sean Reilley
Ashley Morris	So.	PSY	Shari Kidwell
*Danielle Myers	So.	PSY	Ilsun White
*Josh Stephens	Sr.	PSY	Ilsun White
*Nolan Williams	So.	PSY	Sean Reilley

#### **Kentucky Center for Traditional Music**

<b>Student URF</b>	<b>Class</b>	<b>Department</b>	<b>Mentor (s)</b>
Ashley Smith	Sr.	KCTM	Tara Sansom
John Ryster	Sr.	KCTM	Jesse Wells
Thomas Albert	Jr.	KCTM	Jesse Wells
Brock O'Cull	Sr.	KCTM	Jesse Wells

\*presenting at the 2012 Celebration of Student Scholarship

## *Student Index*

Adams, Abbie .....	57
Adams, Jessica .....	54
Adkins, Victoria .....	12, 25, 65
Ahmadi, Amir .....	4, 57, 67
Ahmadi, Susan .....	12, 25
Albert, Thomas .....	68
Allard, Jordan .....	56
Arnett, Jessica .....	34, 66
Arnold, Julie .....	48, 67
Aslam, Sofeia .....	67
Austin, Justin .....	12
Bach, Jeremy .....	55, 61
Bailey, Caitlin .....	11
Baker, Autumn .....	25, 65
Baker, Rebecca .....	61
Barker, Alex .....	14
Barker, Kyle .....	65
Barnett, Kelly .....	47
Barnett, Zachary .....	50
Belcher, Amariah .....	21, 67
Bender, Rachel .....	37, 65
Benjamin, Ashley .....	37
Blanton, Joseph .....	57, 67
Bodenlos, Emily .....	42, 65
Bolar, Devauna Lee .....	6, 66
Bomar, Kate .....	7, 12, 25, 67
Bond, Allison .....	37
Boyd, Evan .....	67
Bradley, James .....	47, 67
Bradley, Joshua .....	59, 64, 67
Bradway, Alana .....	38
Branham, Shelby .....	68
Breeding, Hardy .....	29, 66
Brewington, Megan .....	43, 65
Brown, Amanda .....	17, 66
Brown, Faith .....	6, 66
Brown, Sheri .....	56
Bucklew, Emily .....	44
Burns, Stephanie .....	62
Burress, Jacob .....	63, 64
Burton, Christine .....	31
Burton, Daniel Wayne .....	21
Burton, Kayla .....	5, 66
Bush, Kyle .....	66
Cahall, Benjamin .....	23
Caldwell, Benjamin .....	58, 67
Callihan, Alexia .....	67
Callis, Courtney .....	38

Campbell, Brittany.....	38
Cantrell, Jessica.....	54
Cantrell, Michael.....	67
Carder, Jackie.....	7, 48, 67
Carter, Jennifer.....	52
Casto, Isaac.....	32, 66
Caudill, Allie.....	7, 67
Caudill, Whitney.....	38
Centers, Keith.....	66
Chafin, Justin.....	55, 57
Chalk, Katarina.....	36, 65
Chang, Jorge.....	18, 67
Chapman, Jordan.....	60, 61, 68
Chapman, Suzannah.....	5, 36
Ciccarelli, Heidi.....	67
Clausen, Amy.....	36, 65
Clements, Twyman.....	53
Collier, Angela.....	59, 67
Collis, Alli.....	32
Comley, Katlyn.....	30, 66
Compton, Laura.....	39
Conn, Bryan.....	59, 67
Croushore, Justin.....	34, 66
Culp, Kelsey.....	66
Cundiff, Michael.....	33
Dang, Kien T.....	51, 67
Davis, Alex.....	44, 66
DeHarte, Laken.....	39
DeMoss, Cara.....	49, 67
Dike, Ezra.....	11
Dixon, Adam.....	34, 66
DuChane, Christine.....	48
Dunnavan, Elizabeth.....	28, 65
Dye, Johnathon.....	25, 65
Edwards, Richard.....	57
Eisenhour, Jonathan.....	8
Eldridge, Erica.....	8, 67
Ellis, Aaron.....	4, 68
Emeterio, Sarah.....	12, 25
Estes, Chris.....	58, 67
Ewers, Melissa.....	37
Fannin, Cariee.....	56
Farhat, Caitlin.....	30, 66
Farmer, Cassie.....	55
Ferrall, Josh.....	47
Finch, Amanda.....	63
Fitzpatrick, Jonathan.....	21, 53
Foster, Kaci.....	11, 65
Francis, Ann.....	35, 66

Fugate, Katelyn .....	64
Galbreath, James .....	13, 65
Gasser, Taylor .....	49, 67
Gebka, Stephanie .....	39, 65
Gingras, Carol-Rose.....	8
Glaser-Garbrick, Michael .....	53
Goble, Erica Cline.....	54
Golleher, Zachary .....	13, 65
Greene, Bethany.....	64
Grender, Aspen .....	29, 65
Grey, Will .....	49, 67
Grice, Alison .....	47
Griesenauer, Justine .....	66
Grimes, Caleb .....	22
Hall, Aaron.....	55
Hall, Travis .....	17, 65
Handshoe, John Douglas.....	15, 66
Hargett, John .....	68
Hargett, Justin .....	61, 68
Harmon, Jared .....	51
Hauris, Katy .....	61
Haymond, Julie .....	15, 65
Healea, Jordan.....	23, 67
Healy, Ross .....	67
Hedge, Sylvia.....	55, 56
Heflin, Michelle .....	64
Helton, Audreanna .....	55
Heupel, Katie .....	39
Hicks, Kayla Grace .....	39
Higginbotham, Logan .....	19, 68
Hohenstein, Erich.....	68
Holbrook, William .....	60, 68
Hollenkamp, Kelli.....	42, 65
Horne, Brett.....	54
Horrell, Kristin .....	40
House, Shelby .....	62, 63, 68
Howard, Derek .....	50
Howard, Jaimie .....	53
Howard, Michaela.....	50, 51, 67
Howard, Ronnie .....	18, 68
Howard, Sydney.....	62
Hughes, Erin .....	56
Hunt, Chris.....	56
Hunt, Margo.....	32
Hunter, Katie.....	20
Ison, Chassidy.....	68
Ison, Doris.....	10
Jackson, Emily .....	29, 65
Jackson, Medina.....	63, 65



Jacobs, Austin .....	46
James, Kevin .....	53
Johnson, Nicole .....	26, 65
Johnson, Sarah .....	35, 66
Johnston, Allison .....	43, 65
Jones, Damion .....	12, 25
Jones, Ryan .....	64
Jordan, Devan .....	40
Jump, David .....	17, 66
Kamelgarn, Marisa .....	48, 67
Keeton, Kayla .....	44
Keeton, Savanna .....	56
Kelly, K.J. ....	45
Kelly, Kayla .....	46, 66
Kelly, Robert S. ....	45
Kelly, Kayla .....	46, 46
Kendall, Brooke .....	43, 65
Kendrick, Julia .....	67
Kestner, Jordan .....	54
Kirtland, Marina .....	47, 67
Kline, Gregory Tyler .....	15, 66
Klooster, Susannah .....	15, 70
Lacey, Caitlin .....	31, 66
Lail, Christin .....	13, 25
Lake, Kallie .....	40
Lambert, Kasandra .....	67
Lang, Julie .....	4, 68
Layne, Adam .....	50, 67
Lemley, Jessica .....	67
Lewis, Emily .....	40
Lewis, Megan .....	32
Li, Dandan .....	62
Liles, Tomi-Jo .....	56
Lim, Hyoung Sup .....	52
Little, James .....	68
Lortie, Meredith .....	54
Mabry, Hannah .....	52, 67
Maione, Gianni .....	61, 68
Marsh, Dustin .....	54
Mason, Nicholas .....	65
Matteson, Eric .....	50
May, Adam .....	54
May, David .....	22
May, Jared .....	19
May, Lauren .....	67
McClanahan, Sarah .....	67
McCord, Michael Jason .....	18, 60
McDaniel, Amanda .....	56
McDole, Alia .....	30

McGinnis, Jason.....	52, 68
McKnight, Megan.....	42, 65
McPherson, Shawna.....	61, 63, 68
Messer, James.....	63
Miller, Amber.....	56
Miller, Ashley Marie.....	41
Miller, Bradford.....	33
Miller, Russell.....	8, 67
Miller, Ryan.....	67
Mobley, Carter.....	45, 46, 66
Modaff, Jonathan.....	33, 66
Modaff, Kelly.....	9
Molton, Brandon.....	53
Montgomery, McKenzie.....	41
Moore, Corey.....	12, 28
Morgan, Calie.....	29, 66
Morris, Ashley.....	68
Morris, Julie.....	66
Muncy, William Chad.....	58
Murphy, Cody.....	25, 65
Myers, Danielle.....	5, 61, 68
Nae, Oana.....	33
Neace, Josh.....	56
Nickell, M. Blake.....	68
Noaks, Chango.....	12
Norman, Natalie.....	53
Northcutt, Emily.....	41
O’Cull, Brock.....	68
Orcutt, Stephanie.....	37, 41
Orr, Rebecca.....	41
Parker, Rebecca.....	33
Parker, William.....	68
Patterson, David.....	48
Payne, Amy.....	33
Peck, Kim.....	55
Penick, Moriah.....	46, 66
Pennington, Sonja.....	35, 66
Perry, Susan.....	66
Peterman, Trenton.....	23, 68
Peterson, Annie.....	16, 66
Peterson, Ashley.....	56
Pfalzer, Laura.....	26, 65
Phillips, Sarah.....	40
Pinkston, Michael.....	16, 66
Plank, Cody.....	56
Porter, L. Ashton.....	46
Porter, Lauren.....	55
Powell, Ashley.....	62
Powell, Margaret.....	24, 53

Pridemore, Barbara Jeanelle .....	12, 25
Pyles, Lacey .....	10
Qu, Jin .....	62
Reed, Kasey .....	67
Renyer, Kathryn .....	49, 67
Rigdon, Alicia .....	37, 65
Riggsby, Joshua .....	44
Roberts, Rebecca .....	7, 48, 67
Robinson, Luke .....	58
Rose, Terri .....	43, 65
Rose, Tyler G. ....	20
Rosen, Rachel .....	52
Ruffing, Cory .....	63
Ruggiero, Ashley .....	12, 25, 26, 65
Runyon, Wessly .....	53
Ryster, John .....	68
Salyer, Cody .....	55
Saunders, Carly .....	16, 66
Sawyer, Courtney .....	56
Schneider, Brad .....	20
Schoenhagen, Paul-Henry .....	61
Schoenhagen, Sarah-Lee .....	61
Schoo, Kristina .....	62
Schwab, Luke .....	50
Sebastian, Kristy .....	55
Sharma, Biswas .....	27, 68
Shaw, Emily .....	35, 66
Shelton, Staci .....	36
Sheppard, Kayla .....	29, 66
Shimizu, Ranko .....	17, 66
Short, Brittany .....	56
Siebart, Kendyl .....	66
Siedenber g II, John .....	66
Sims, Blake .....	66
Singer, Isaac .....	46, 66
Sizemore, Kayla .....	62
Skaggs, Clay .....	65
Slone, Amberleigh .....	61
Slone, Martin .....	54
Smart, Noelle .....	57
Smith, Angel .....	53
Smith, Ashley .....	68
Smith, Leah .....	62
Smith, Megan .....	56
Sorrell, Andrew .....	67
Sparks, Samantha .....	39
Spencer, Samantha .....	63
Stacy, Tiffany .....	67
Staton, Chelsea .....	19

Stephens, Josh .....	61, 68
Stone, John .....	53
Story, Danielle .....	5, 66
Stratton, Morgan .....	27
Sullivan, Amanda .....	49
Tackett, Larry .....	9, 67
Thacker, Lindzey .....	18
Tran, Yen .....	12, 13, 27, 65
Travis, Amber .....	66
Vance, Courtney .....	66
VanHook, Lauren .....	27, 65
Wagner, Chelsea .....	56
Wagner, Hannah .....	57
Wallace, Lisa .....	57
Ward, Tina .....	62
Washburn, Brooke .....	67
Waymeyer, Elizabeth .....	42
Wells, Chad .....	26
Wells, Jennifer .....	65
Wells, Kara .....	9
Wells, Matthew .....	28, 65
Whitaker, Kelsey .....	68
White, Brandon Scott .....	22
White, Hailley .....	31, 66
Whitehead, Whitley .....	49, 67
Whitt, Natasha .....	67
Wilks, Evett .....	28, 65
Williams, Andrea .....	63
Williams, Kameron .....	33
Williams, Krystal .....	68
Williams, Nolan .....	63, 68
Williamson, B.C. ....	45
Willis, Hannah .....	6, 66
Wilson, Emily .....	64
Witham, Kelsie .....	56
Witkowski, Travis .....	47
Young, Kristin .....	52
Young, Lauren .....	64



**Celebration of Student Scholarship  
Sponsored by:**

**Office of the President  
Office of the Provost  
Office of Research and Sponsored Programs  
Office of Undergraduate Research**

---

**Members of the Celebration of Student Scholarship Committee**

**Gina Blunt  
Laurie Couch  
Robert Franzini  
Timothy Hare  
Philip Krummrich  
J. Marshall  
Bruce Mattingly, Chair  
Scott McBride  
Janet Ratliff  
Allen Risk  
Rebecca Roach  
Paul Steele**

---



MSU is an affirmative action, equal opportunity, educational institution