

Program and Abstracts
Celebration of
Student Scholarship

M

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

April 23, 2009

Celebration of Student Scholarship

April 23, 2009

Program Overview

Adron Doran University Center

Registration, poster set-up, and continental breakfast	8:00 – 8:50 a.m.	Crager Room
Welcome	8:50 – 9:00 a.m.	Crager Room
Oral Presentations	9:00 – 11:30 a.m.	301, 302, 312, Riggle, Commonwealth & Eagle Meeting Rooms
Lunch	11:45 – 12:45 p.m.	Crager Room
A. Frank and Bethel C. Gallaher Memorial Music Performance	12:45 – 1:00 p.m.	Crager Room
Poster Presentations	1:00 – 3:00 p.m.	Crager Room
Concluding Remarks	3:00 p.m.	Crager Room
Poster removal	3:10 p.m.	

Welcome Statements.....2

Wayne Andrews, President
 Karla Hughes, Provost
 Bruce Mattingly, Associate Provost for Research and Sponsored Programs
 Robert Albert, Dean, College of Business
 Cathy Gunn, Dean, College of Education
 M. Scott McBride, Interim Dean, Caudill College of Humanities
 Gerald DeMoss, Dean, College of Science and Technology
 David Rudy, Dean and Associate Provost, Institute for Regional Analysis and Public Policy and Center for Regional Engagement

Oral Presentations and Abstracts.....4

Poster Presentation Abstracts.....21

Recipients of Undergraduate Research Fellowships 2008-2009.....44

TABLE OF CONTENTS

I am pleased to welcome you to the Fourth 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 & Vice President for Academic Affairs

W
E
L
C
O
M
E



“Faculty actively engaged in the scholarship of their discipline make outstanding role models and mentors, and provide students with integrative learning opportunities difficult to achieve in the traditional classroom setting. The quality of the work presented in this showcase by these undergraduate students clearly demonstrates the importance of the Teacher-Scholar model.”

Dr. Bruce Mattingly, Associate Provost for Research and Sponsored Programs

“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



“This Celebration Week showcases MSU’s students - their talents, their enthusiasm, and evidence of their research projects. The College of Education faculty and staff are proud of these awesome students.”

Dr. Cathy Gunn, Dean, College of Education

“Those within the arts, humanities and social sciences applaud the focus and priority placed on collaborative learning between faculty and undergraduate students engaged together in research and creative productions. A curriculum based upon ‘Undergraduate Scholarship’ will advance interdisciplinary activities, promote learning communities, and enhance a student’s entire academic experience.”

Dr. M. Scott McBride, Interim Dean, Caudill College of Humanities



“The Celebration of Student Scholarship is an exciting and stimulating event that marks the culmination of research experiences and creative productions accomplished each academic year through collaborative efforts among student scholars and their faculty mentors. Research and creative production opportunities foster student engagement in meaningful inquiry to enhance teaching and learning throughout the academy. This Celebration highlights the intellectual capacity of the Student-Scholar Model to achieve academic excellence at Morehead State University.”

Dr. Gerald DeMoss, Dean, College of Science and Technology

“Undergraduate research is the best way to actively engage students with faculty in enterprises that extend teaching and learning well beyond the classroom. When students and faculty get involved in undergraduate research their skills, knowledge, and capacity are significantly impacted and their enthusiasm and intellectual imaginations go off the charts!”

Dr. David Rudy, Dean and Associate Provost, Institute for Regional Analysis and Public Policy, and Center for Regional Engagement



Celebration of Student Scholarship

Adron Doran University Center
Morehead State University

April 23, 2009

Concurrent Session - ADUC 301

9:00 – 9:15 a.m. **On the sum cost of sum graphs**

301

****James F. Gibbs III, R. Duane Skaggs, Mentor, Zach Wagner, Gerd H. Fricke, Frank N. Harary, Jeffrey Ward, Department of Mathematics and Computer Science, College of Science and Technology***

The sum graph of a finite set of positive integers S has S as its node set, with nodes u and v adjacent if and only if $u + v$ is also in S . The sum cost of a sum graph is the minimum possible sum of the elements of S . We consider various classes of sum graphs and construct an infinite family of sum graphs whose sum costs are realized by sets not containing 1. We conclude with a collection of open problems and an application of sum graphs to graph storage. This research is partially funded by an Undergraduate Research Fellowship.

9:15 – 9:30 a.m. **Neck endurance test data analysis**

301

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

Statistical analysis was performed regarding the agreement of inter- and intra- rater reliability of static neck endurance test data. The study determined normative data for males vs. females in a non-painful population to use in comparison to a patient/painful population.

9:30 – 9:45 a.m. **Ranking the SEC with monkeys**

301

****Evan Boyd, Dr. Christopher Schroeder, Mentor, Department of Mathematics and Computer Science, College of Science and Technology***

In a paper by Callaghan, Mucha and Porter, a system is presented for ranking college football teams using a group of monkeys who randomly change their vote with probability p based on the outcome of head-to-head meetings. We will look at using this system to rank the SEC teams for various seasons, modifying the system to include the factor of home-field advantage. The rankings will then be examined to determine if they are a better predictor of postseason success than traditional seeding methods. This research was supported by an MSU Undergraduate Research Fellowship.

Program Schedule

9:45 – 10:00 a.m. Pebbling with sudoku

301

****Allison Pankow, *Vanessa Adams, Dr. Robin Blankenship, Mentor, Department of Mathematics and Computer Science, College of Science and Technology***

When at least two pebbles are on any vertex of a graph, a pebbling move can be made to a connected vertex by moving one pebble to that vertex and removing the second pebble from play. The pebbling number of a graph is the smallest number of pebbles that can be used to get to any vertex on the graph for any configuration. Proofs for well-known results of paths, cycles, complete graphs and complete bipartite graphs will be given. Pebbling numbers of Sudoku and Chessboard graphs will be investigated.

10:00 – 10:15 a.m. Equivalence number of graphs, with focus on “n go k” family

301

****Brian Salyer, Dr. Doug Chatham, Dr. Duane Skaggs, and Dr. Robin Blankenship, Mentors, Department of Mathematics and Computer Science, College of Science and Technology***

The equivalence number $eq(G)$ of a graph G is the minimum number of equivalence relations, or routes, needed to cover the edge set of that graph. The “n go k” family is a collection of graphs with n vertices numbered 0 thru $n-1$ where an edge is of the structure $(x, x + j)$ or $(x, x - j)$ for j in the range $[1, k]$ where x is a vertex in G . We consider the equivalence number of “n go k” graphs, which provide counterexamples to our earlier conjecture on an upper bound for the equivalence number. This research is funded through an Undergraduate Research Fellowship.

10:15 – 10:30 a.m. Break

10:30 – 10:45 a.m. Mobile data mining algorithms for fourth generation (4G) mobile networks

301

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

In mobile mining, the ultimate goal is to accurately predict, with as little error as possible, where the mobile device user will use his/her cell phone next and what kind of service he/she will use. This is achieved by the discovery of frequent locations and formation of frequent patterns. In order to find these frequent patterns, a new algorithm, which uses fundamental components and modifications of algorithms VFDTc (Very Fast Decision Tree), SPADE (Sequential Pattern Discovery Using Equivalence classes), and concepts of data partitioning methods, has been developed and tested. This presentation will present results of the currently conceptualized algorithm and discuss future plans for the algorithm. This research was supported by MSU Undergraduate Research Fellowship. A special thanks goes to Nathan Eagle from the MIT Mining Project for providing the dataset used for testing and analyses of the developed algorithm.

10:45 – 11:00 a.m. Remote computer status monitoring over the internet by using LabView

301

****Rashika Agrawal, Dr. Yuqiu You, Mentor, Department of Industrial and Engineering Technology, College of Science and Technology***

This project designed and established a remote monitor system for monitoring the status of lab computers. The system keeps track of the usage of the CPU and the memory of the computers in the computer labs through remote interface over the Internet and email notifications to authorized personnel. The remote interface also provides live video on the computer lab from an Internet camera. LabVIEW, a graphical programming language is used in this project to develop a server-client structure and an interface for computer status monitor. A web server is established for the communication among computers been monitored, the LabVIEW server, and remote clients. This system can be applied at remote computer monitoring applications in both academic and industrial environment. I would like to acknowledge the support from UG Fellowship for this project.

11:00 – 11:15 a.m. New surficial geologic mapping in Kentucky to support landslide susceptibility studies: the Farmers 7.5 minute quadrangle example

301

****Monte Rivers, Charles E. Mason, Mentor, Department of Physical Sciences, College of Science and Technology***

In 2005 the Kentucky Geological Survey embarked on a new mapping project in Kentucky. The new maps will be depicting the surficial geology at a scale of 1:24000. The funding for the project is through the National Mapping Act in the form of State Map Grants and in the case of the Farmers Quadrangle an EDMAP Grant. The Surficial Mapping Group under Dr. William Andrews Jr. stewardship is developing the criteria and procedures as well as units to be mapped for the this project. Once the mapping program is developed in Kentucky it will be utilized nationally. To date, 33 maps in the series have been completed and are being readied for publication and 5 are in progress, including the Farmers Quadrangle. Surficial Geologic mapping is the mapping of the unconsolidated deposits that lie on top of the bedrock and blanket the landforms. These deposits are broken down into three basic units residuum, colluvium, and alluvium. These maps more importantly will include potential hazards such as recent and relic landslides, and other types of mass wasting. Additionally they will show other units such as artificial fill, and exposed bedrock. These maps will provide an improved knowledge of the ground conditions, which will greatly enhance construction planning (especially for Kentucky Transportation Department) thus reducing cost associated with economic development for both government and private individuals.

The maps are being produced with the use of ArcGIS Software and GPS units for data collection and ground checking the mapped areas. These digital maps will be georeferenced using NAD 1983 Single Zone State Plane coordinates system, which is the digital map standard in Kentucky. The surficial mapping of the Farmers Quadrangle is currently 80% complete and is to be completed by June 2009. The area was selected because of its being rapidly developed, especially along the I-64 corridor and its high frequency of landslides. To date two new map units have been identified in the map area, and a new technique for recognizing landslides on maps is being developed. Here, through the use of digital elevation and slope models utilizing ArcGIS and knowledge of the bedrock geology of the area, current and potential mass wasting events can be identified. This research was supported by the MSU office of Research and Sponsored Programs and a U. S. G. S. EDMAP Grant.

Concurrent Session - ADUC 302

9:00 – 9:15 a.m. Selecting healthy choices at fast food restaurants

302

***Megan E. Huellemeier, Dr. Donna J. Corley, Mentor, Department of Nursing, College of Science and Technology**

Poor eating behaviors during college life place college students at risk for obesity and negative health outcomes such as hypertension. Fast food restaurants provide foods that are economical and easily accessible but often high in fat and sodium. This study investigated healthier choices available at “fast food” restaurants frequented by a group of college students. Students ate out three to four times weekly and selected “fast food” high in calories, fat, sodium, and sugar. Combination meals from McDonalds, Wendys, Taco Bell, and Subway were assessed to determine nutritional value and cost. Suggestions for more nutrient dense meal options at “fast food” restaurants will be provided to help college students identify healthier choices. This research was supported by the MSU Undergraduate Research Fellowship.

9:15 – 9:30 a.m. Taboo in the classroom: Voices of 4 intellectually disabled adults’ sex education experience

302

***Natalie Peterson, Dr. James Knoll and Dr. Kimberlee Sharp, Mentors, Department of Curriculum and Instruction, College of Education**

This presentation will report on the results of original research regarding the sex education experiences of four adults with intellectual disabilities. The researcher applied qualitative research methods, specifically, the semi – structured interview, in order to ascertain the perceptions and recollections of their sex education programs in high school. The research unveiled several themes, two of which are significant: 1) that among this group of participants, sex education was not among their educational experience; and 2) that the participants articulated an emphasis on sex education being no more than education in human growth and development. These findings led the researcher to conclude that these individuals with intellectual disabilities have a rudimentary understanding of the concept, “sex,” and its physical and emotional dimensions.

9:30 – 9:45 a.m. Developing and enhancing English education professional development and aid

302

***Theresa Lang, Kathryn Mincey, Mentor, Department of English, Foreign Languages, and Philosophy, Caudill College of Humanities**

Last year, we took results from a survey of high school teachers throughout the state about literature taught in high schools and compiled them into a websites for all teachers to access. This year, thanks to the Regional Engagement Grant funded through IUARP, we enhanced the English Education Center on campus for regional professional and pre-professional teachers to access and provided professional development for teachers in our service region. Throughout the year, we have enhanced the website adjacent to the center for teachers out of our region.

9:45 – 10:00 a.m. The reverse ekphrasis project

302

***Ryan Anderson, Crystal Wilkinson, Mentor, Department of English, Foreign Languages, and Philosophy, Caudill College of Humanities**

A collaboration project designed to pair writers with original prose, poetry or fiction with artists to interpret these works visually. This collaboration is meant to show the relationship between written art and visual art, and the intermingling between them. Artists can use whatever medium they choose to make these interpretations, as long as their final product is ready to be wall-mounted or able to be placed on a stand for gallery purposes. The culmination of the collaboration will be a Reading and Presentation Night in the Strider Gallery of Claypool Young Art Gallery. This project was funded by MSU Undergraduate Fellowship.

10:00 – 10:15 a.m. Development, enhancement and documentation of the MSU creative writing program and student creative writing community

302 *Alex Schulz, Chris Holbrook, Mentor, Department of English, Foreign Languages and Philosophy, Caudill College of Humanities

Alex has developed, enhanced and documented the efforts of the Creative Writing Program and the student creative writing community at MSU. This has involved a continued involvement with Inscape, including with literary and design editors as well as writing a detailed guidelines for the production process, with the goal of further refining the process of the journal's production. Other responsibilities of the fellowship have included an involvement with the organization and facilitation of extra curricular creative writing activities, communicating with visiting authors, conducting visual recordings of events, facilitating open mic nights for students and acting as an overall liaison for the creative writing community.

10:15 – 10:30 a.m. Break

10:30 – 10:45 a.m. Demonstrating Economic concepts with *Mathematica* to facilitate learning: Econ Made Easy

302 *Amir Ahmadi, Dr. Thomas Creahan, Mentor, Department of Accounting, Economics & Finance, College of Business

While studying various graphical economic concepts, many students struggle to understand and remember their various methods and characteristics. These Wolfram-published presentations illustrate the usage of these concepts with *Mathematica* in a dynamical manner while students are in control. This project is supported by a MSU UG Fellowship.

10:45 – 11:00 a.m. Basic personal finance knowledge: Who knows what and what do we need to know?

302 *Erica Belmont, Dr. Janet Ratliff, Mentor, Department of Accounting, Economics and Finance, College of Business

This study tests the personal financial knowledge of students prior to and after taking a personal finance course in the spring semester of 2008 at a regional university in Kentucky. Overall knowledge of the subject matter improves with education; however, the effect of family background of personal financial knowledge was found to be statistically significant when compared to pre test and post test scores. In addition, practitioners and professionals contribute knowledge accumulated from years of experience in the field of finances to recommend that educators focus on teaching the most basic concepts of personal finance to achieve the most significant impact to improve students' lives. This research study was supported by a MSU Undergraduate Research Fellowship.

11:00 – 11:15 a.m. Development of RNA linking libraries for resolution of chemical combinatorial mixtures

302 *Kendra McQuerry, Craig Tuerk, Mentor, Department of Biological and Environmental Sciences, College of Science and Technology

RNA libraries have been used to produce a variety of functional molecules spanning the range from RNA enzyme study to pharmaceutical and diagnostic applications. We have created pilot RNA libraries that can produce replicable affinity tags that will covalently attach to specific members of a chemical combinatorial library. The library is produced as usual having a random region of 40n flanked by fixed sequence regions that allow rounds of selection and RT-PCR. The reactivity of the members of the RNA linking library was provided by extension of RNA members with Klenow fragment using a small oligodeoxynucleotide template that allows the incorporation of 5-aminoallyl-uridine and to provide a positive control for library method development biotinylated-deoxyuridine. As a proof of concept we will present to such modified RNA libraries either biotin or digoxigenin modified with N-hydroxysulfosuccinimide (NHS) which can react with the aminoallyl modifications. Supported by NSF-EPSCoR grant (to Craig Tuerk) and Undergraduate Research fellowship to Kendra McQuerry.

Concurrent Session- ADUC 312

9:00 – 9:15 a.m. The odyssey of Depo-Provera: A story of the politics of pharmaceutical risk

312

***Amelia Conway, Dr. William Green, Mentor, Department of Geography, Government and History, Caudill College of Humanities**

The sixty year odyssey of Depo-Provera has received episodic attention during the national struggles over its FDA licensing as a contraceptive drug. Rarely has this story been linked to stories involving state medical malpractice and products liability issues raised by its contraceptive use and criminal legal and civil liberties issues raised by its use in state courts as a sentencing alternative for sex offenders. Our research joins these three stories to tell a collective and comprehensive story about the politics of pharmaceutical risk in our federal system. This research was supported by MSU Undergraduate Research Fellowship.

9:15 – 9:30 a.m. Finding the last battle of the American revolution: Public history, archaeology and the battlefield of Blue Licks

312

***Erik Hale, Dr. Adrian Mandzy, Mentor, Department of Geography, Government and History, Caudill College of Humanities**

In the spring of 2008 history students from Morehead State University took part in a public history project at the Blue Licks Battlefield State Resort Park. Lead by Associate Professor of History, Dr. Adrian Mandzy, the team consisted of six students from the history junior seminar class and a team of specialists from the Battlefield Restoration and Archaeological Volunteer Organization (BRAVO). The goal of this project was to locate any remaining evidence from “The Last Battle of the American Revolution”. During the course of this research project, students learned how to conduct an archaeological survey and write a report for a state agency. By working with professionals in the field, students were provided with a hands-on experience that went beyond the traditional classroom environment. As a result of the survey, we were able to establish the actual location on the battlefield and provide the park with the evidence to lobby for placement of the battlefield on the National Register of Historic Places. This project was made possible through the generous support of the Kentucky Humanities Council, the Robinson County Tourism Commission, and Morehead State University.

9:30 – 9:45 a.m. Cultural conflict at Morehead State University: From President Doran to the Vietnam war

312

***Alexis Damron, Jason Griffith, Jordan Maynard, History 399C, Dr. John Ernst, Mentor, Dustin Adkins, Heather Brooks, Alexis Damron, Kayla Dulen, TJ Freno, Jason Griffith, Amy Lewis, Jordan Maynard, Jason McCarty, Amanda McCoy, Ryan Raleigh, Casey Simpson, Raechel Whetstone, Department of Geography, Government and History, Caudill College of Humanities**

In the 1960's Morehead State University was experiencing an unprecedented period of growth and change. The university began this metamorphosis with the selection of Adron Doran as President in 1954. Doran's larger-than-life persona and political connections helped transform MSU from a small college to a blossoming university. However Doran's policies, combined with student and faculty unrest concerning the Compulsory ROTC program, led to conflicts between Doran and students at both Morehead State and other regional universities. This conflict caused heated reactions from both sides along with satirical newspaper articles and an underground student movement at Morehead State. This research was gathered to determine how Dr. Doran, his policies, and the Vietnam anti-war movement contributed to the growth of the university and its identity during the tumultuous Vietnam era.

9:45 – 10:00 a.m. Civic capacity and community development in Appalachia: The relationship between political culture and social capital

312 *Amy Denham, *David Lee Daniel Jr., Britney Huron, Billy Ousley, *Eric Patton, *Courtney Perry, John Taylor, *Samantha Yaeckel, Dr. Stephen Lange, Mentor, Institute for Regional Analysis and Public Policy

Civic capacity, including human capital and social capital, are known to impact community and economic development positively. This study examines the relationship between social capital and political culture in the United States and finds that traditionalistic political cultures consistently have less social capital than moralistic political cultures, regardless of the level of economic prosperity. As a result, different development approaches are likely to have different degrees of success depending upon the political culture of the region. These findings have consequences for the traditional economic development approach used by the Appalachian Regional Commission and the participatory community development approach used by the NewCities Institute. This research was supported by the Appalachian Teaching Project funded by the Appalachian Regional Commission.

10:00 – 10:15 a.m. Communication and propaganda in the German Democratic Republic

312 *Kristin Hausstein, Dr. Robert Frank, Mentor, Department of Communication and Theatre, Caudill College of Humanities

In order to understand better the former East German state, one must know the propaganda methods used by the SED to exert power over its people in order to shape public opinion. Besides the obvious use of force, there are more subtle means of influence and control. Withdrawing information and limiting communication play an important role in this control and tend to be more effective than physical force, threats and oversight. Nevertheless, language is most often used as a tool of power and manipulation. This paper examines how Communist leader Erich Honecker used *Schlagwörter* (catch words), such as *Imperialismus* and *Kommunismus*, to inform the masses of an issue. However, these catchwords were frequently subjected to crass simplification of facts and were often questionable in accuracy and truth. *Schlagwörter* are used subconsciously to elicit certain reactions and beliefs which become manifested over time.

10:15 – 10:30 a.m. Break

10:30 – 10:45 a.m. History written with lightning: The second rise of the invisible empire

312 *Christopher Wiseman, Dr. Kristina Durocher, Mentor, Department of Geography, Government, and History, Caudill College of Humanities

In 1915, David Wark (D.W.) Griffith released his epic film, *The Birth of a Nation*, which emphasized the social effects of Reconstruction, a time when southerners struggled to impose white supremacy through re-imagining a nostalgic antebellum society. The prevalent theme that emerged from the film was the exaggerated, idealistic, portrayal of white masculinity within the Ku Klux Klan. Historian Gail Bederman argues that the post-war (Civil War) generation of men underwent a “masculinity crises,” to these men the film rekindled the notion of what it meant to be a southern, white man. The film’s overtones suggested that masculine virtue rested in the Klan, and that one could achieve ideal masculinity through the Klan. As a result, Klan membership reached an all time high, sparking the second rise of the “Invisible Empire.”

10:45 – 11:00 a.m. Survival analysis of sex offenders in treatment: Considering the influence of static and dynamic risk factors

312

****Laura Hall Reed, Dr. Paul D. Steele, Mentor, Department of Sociology, Social Work, and Criminology, Caudill College of Humanities, and Center for Justice Studies, Institute for Regional Analysis and Public Policy***

As a part of a larger investigation of sex offending and public safety in Kentucky, this study employs survival analysis to explore the contribution of personal and social risk factors to the completion of mandatory sex offender treatment programs in the Commonwealth. Since the successful treatment completion has been inversely associated in several studies with criminal recidivism, it becomes important to identify the risk factors influencing completion, and to recommend policies and procedures resolving barriers to successful treatment outcomes. As treatment completion rates increase, the criminal recidivism rate of such offenders is likely to decrease, resulting in safer communities in Kentucky. The project was made possible through MSU's Undergraduate Research Fellow program, and the Mental Health Division of Kentucky's Department of Corrections.

11:00 – 11:15 a.m. Jesus, wealth, and capitalism: Analysis of capital and its relationship to Jesus

312

****Eric Boos, Dr. Ric Caric, Mentor, Department of Geography, Government, and History, Caudill College of Humanities***

The power of capitalism as a dominant economic practice has translated deep seeded social interaction at all levels of society. This presentation stands to analyze various critics and proponents of capitalism with a close reference to Jesus and the New Testament. From top grossing CEO's to American Socialists, the presentation shall work through discerning view points of capitalism, in comparison to the teachings of Jesus. Largely focusing on the accumulation of wealth and its effects on the human social condition, the presentation will ultimately seek out theoretical evaluation of Jesus and other commentators on capitalism.

11:15 – 11:30 a.m. The role of income inequality, drug use, and educational attainment in crime for Kentucky counties

312

****Nicholas Kyle Christy, Dr. Ali Ahmadi, Mentor, Department of Accounting, Economics, and Finance, College of Business***

The purpose of this study is to investigate the role of drug use, income inequality and level of education in the rates of crimes in Kentucky. Using data gathered from the US Census Report in 2000 as well Kentucky crime data from Kentucky State Police Crime in Kentucky Annual Report for 2000, this study tested a Multiple Regression Model by regressing the Crime Rate, the dependent variable, as a function of the Gini Index, Percentage of population more than 25 years with 4 year degrees and the number of drug arrests per county, as independent variables. The result of the study indicated that income inequality and number of drug arrests play a significant role in the number of crimes in Kentucky.

Concurrent Session – Commonwealth Room

9:00- 9:15 a.m. Mozart and the clarinet: A study of mozart’s clarinet quintet in a major, k. 581

Commonwealth

****Timothy Bailey, Professor Lori Baruth, Mentor, Department of Music, Caudill College of Humanities***

Wolfgang Amadeus Mozart's quintet for clarinet and strings, K 581, one of his late compositions, is a cornerstone of the clarinetist's repertoire. The quintet was studied formally, texturally, and historically, through study of the score as well as through recordings and several books that provided information about Mozart and his quintet, and through the practicing of this piece individually and in private lessons. This quintet was also compared to Brahms' quintet for clarinet and strings and to Brahms own life in writing his quintet. Through this study, an understanding of Mozart's quintet and preparation for performance have been developed. This research was supported by an MSU Undergraduate Research Fellowship.

9:15-9:30 a.m. Developing Interpretation: Understanding contemporary saxophone repertoire through Gestalt principles and cognitive science

Commonwealth

****Sara Sipes, Dr. Nathan Nabb, Mentor, Department of Music, Caudill College of Humanities***

The Gestalt Theory deals with how information is processed. The total picture is viewed with patterns or as a whole rather than as distinct component parts combined to create information. Fred Lerdahl used the Gestalt theory to analyze tonal music. The process of grouping is the most basic component of music understanding. Using grouping, rhythmic analysis, metrical structure, and reduction, performers are given a way to perceive a piece of music as an entire picture. To listeners, contemporary music is a different subject as the typical person has trouble perceiving the intricacies of contemporary music and as a result have little understanding of it. Through analysis and performance, the Gestalt Theory will be applied to contemporary music in order to give listeners and performers a better understanding of this type of music. This research was supported by MSU Undergraduate Research Fellowship.

9:30 – 9:45 a.m. New concert transcriptions, arrangements, and compositions for tuba/euphonium ensemble

Commonwealth

****Kevin M. Callihan, Dr. Stacy Baker, Mentor, Department of Music, Caudill College of Humanities***

This project will focus on creating effective new concert transcriptions and arrangements of works chosen from public domain or with permission of copyright holders as well as new original compositions to be premiered in concert by the Morehead State University Tuba/Euphonium Ensemble. The challenge in writing for instruments that share the same tessitura lies in maintaining balance between melody and accompaniment. The process of discovering effective scoring to address this issue includes experimenting with featuring the euphonium as a solo instrument. Building a broader concert repertoire for Tuba/Euphonium Ensemble through the creation of new transcriptions, arrangements, and original compositions will foster greater interest in like-instrument ensemble as a viable performance medium. This research was supported by MSU Undergraduate Research

9:45 – 10:00 a.m. The influence of choral music in trombone literature through arranging and performing

Commonwealth

****Nicholas Breiner, Dr. Jeanie Lee, Mentor, assisted by MSU Trombone Choir: Justin Croushore, Kevin Callihan, Ranko Shimizu, Steffan Hanson, J.D. Handshoe, Ryan Elswick, Jordan Burks, Rich Miller, Department of Music, Caudill College of Humanities***

The project involved researching the use of choral works in trombone literature and studying the various compositional techniques used historically in arranging choral works for trombone choir. The primary focal point of the project was the creation of the arrangement of Joseph Martin's *"The Awakening"* for 8 part trombone choir from its original format written for SATB choir with piano or orchestral accompaniment. Performances of the final product will be presented by the MSU Trombone Choir conducted by Mr. Breiner at various venues, including the premiere performance on Student Recital for all of MSU's music major students in March, and MSU's 4th Annual Trombone Day in May. This research was supported by the MSU Undergraduate Research Fellowship.

10:00 – 10:15 a.m. History and compositional trends in trombone solo literature from the baroque period to the present

Commonwealth

****Justin Croushore, Dr. Jeanie Lee, Mentor, Department of Music, Caudill College of Humanities***

The use of the trombone as a solo instrument is a practice that began long ago, dating back to the first trombone solo written in 1621. Since then, music has changed in dramatic ways due to developments in the common practices of composers throughout history, and these changes are reflected in the solo trombone literature. This project is an examination of these changes in compositional trends both through analytical interpretation and through performance of the works in a solo recital. Starting with the first known work for solo trombone, a representative solo for trombone from each major musical period was selected, and these works will operate as vehicles to learn about important developments in music. This research was supported by MSU Undergraduate Research Fellowship.

10:15 – 10:30 a.m. Break

10:30 – 10:45 a.m. Get fit: Body, mind, and spirit

Commonwealth

****Gary C. Cornett, Dr. Deborah Plum, Mentor, Department of Communication and Theatre, Caudill College of Humanities***

Five episodes of a student-targeted television show on fitness were produced for the Morehead State University on-campus television station. These episodes presented information to the students on nutrition, exercise, goal setting, motivation, and mental wellness. The material presented in these shows was developed with the aid of Morehead State Wellness Center staff and was intended to help improve student health and wellness. Production work was done in the studios of Breckinridge Hall. This included engineering, shooting, and digital editing. The show airs at various times throughout the week on channel 77 of MSU's cable system. This project was supported by an MSU Undergraduate Research Fellowship.

10:45 – 11:00 a.m. Webmaster for MSU-TV, and supervisor of the media production team making MSU promotional videos and PSAs for use on MSU-TV

Commonwealth

***Savannah G. Varble, Tim L. Creekmore, Mentor, Department of Communication and Theatre, Caudill College of Humanities**

The Department of Communication and Theatre operates MSU-TV on MSU's campus cable channel 77. Each semester MSU-TV airs different student produced television programs for MSU students, faculty and staff. Savannah Varble maintains the MSU-TV website, and updates the site with streaming video versions of the student produced programs on MSU-TV. As webmaster, she also posts current information about each of the producers, the programs and MSU-TV in general. Savannah's responsibilities as an Undergraduate Fellow also include supervising a staff of Electronic Media production students charged with the task of producing MSU promotional videos and Public Service Announcements.

11:00 – 11:15 a.m. I want to make magic: The importance of acting for the vocal performer

Commonwealth

***Molly Maynard, Dr. Greg Detweiler, Mentor, Department of Music, Caudill College of Humanities**

This research project focuses on the relationship between theatrical and choral performances. By using exercises cited in the book "Acting One" by Richard Cohen, referencing theories from Tom Carter's "Choral Charisma", and creating new techniques tailored to the choral singer, we are improving the quality of choral performance. By teaching and utilizing acting techniques, the choral singer will be able to improve in vocal quality and will also be able to give a more commanding and honest performance that will energize and inspire an audience. Specific performances of pieces using this approach were compared to performances of pieces not using the approach to see what impact the techniques would have on audience appreciation. This research is supported by Morehead State's Undergraduate Research Fellowship Program

Concurrent Session – Eagle Meeting Room

9:00- 9:15 a.m. **Defensive pessimism and its relation with behavior inhibition, rejection sensitivity and coping strategies**

Eagle Meeting ***Jeffery Dobson, Dr. David Olson, Mentor, Department of Psychology, College of Science and Technology.**

Defensive pessimism is a cognitive strategy which serves to induce anxiety and motivate an individual towards enhanced performance. The current project examined the relationship between defensive pessimism and other measures related to anxiety and threat, such as behavior inhibition (BIS) and sensitivity to rejection. The study also explored the relationship between defensive pessimism and various coping strategies. Participants completed measures of defensive pessimism, approach and inhibitory tendencies, and coping strategies. Correlational analyses revealed that defensive pessimism was positively related to behavior inhibition and rejection sensitivity. Unexpectedly, defensive pessimism was positively related to several potentially dysfunctional coping strategies, which may be attributed to the construct's strong pessimistic component.

9:15-9:30 a.m. **A replication of the impact of reviewing information from AD/HD case studies on malingering of AD/HD symptoms**

Eagle Meeting ***Nora Weyh, Matt Berry, Dr. Sean P. Reilley, Mentor, Department of Psychology, College of Science and Technology**

Attention deficit hyperactive disorder (AD/HD) is a complex, and frequently diagnosed psychological disorder. Behavioral rating scales are among the most commonly used measures in AD/HD evaluations in addition to a clinical interview. A gap in the current assessment literature concerns the susceptibility of AD/HD measures to malingering due to review of multiple sources of public information about AD/HD via the internet. Using an experimental approach (n=120), the current study replicated preliminary findings that studying published psychiatric case studies about patients with AD/HD would lead to increase AD/HD knowledge, and successful malingering on common AD/HD rating scales. Our data were supportive of these relationships and the results are discussed in relation to malingering on common AD/HD rating scales.

9:30 – 9:45 a.m. **Development of the adult knowledge of attention deficit disorders scales**

Eagle Meeting ***Cassie Watkins, Dr. Sean P. Reilley, Mentor, Department of Psychology, College of Science and Technology**

Attention Deficit / Hyperactivity Disorder is a prevailing lifespan disorder. Assessing knowledge of AD/HD is useful for psychoeducation and treatment purposes; however, research is limited. The present study provides data supporting the Adult Knowledge of Attention Deficit Disorders Scale (AKADDS). Specifically, internal consistency was found to be acceptable for subscales measuring diagnostic symptoms, treatment factors, and associated features of AD/HD. Convergent validity was demonstrated through strong correlations with a child AD/HD knowledge measure. Experimental work showed that AKADDS scores were positively increased by an experimental knowledge enhancement when students studied handouts of diagnostic criteria or an Adult AD/HD case study compared to a control condition in which they studied non-AD/HD mental health information. This research is supported by a Morehead State University Undergraduate Research Fellowship.

9:45 – 10:00 a.m. The impact of AD/HD knowledge on malingering strategies

Eagle Meeting

***Kelly D. Gruber, Dr. Sean Reilley, Mentor, Department of Psychology, College of Science and Technology**

AD/HD is a common disorder with symptoms of attention and/or hyperactivity. Usage on-line AD/HD information for malingering and specific strategies is not well-known. In a pilot study, participants who studied credible information on AD/HD from the Internet improved their AD/HD knowledge, and successfully malingered on child and current AD/HD symptom scales. Using an experimental approach, the current study assessed the strategies used by malingering participants (N=36) who were given different types of knowledge (control-no AD/HD, AD/HD diagnostic criteria, AD/HD case history of adult measures) to mangle on childhood and current AD/HD symptom scales. Results showed malingerers with diagnostic and case history knowledge reported significantly more AD/HD knowledge, symptoms, and used both common and unique malingering strategies. Research supported by an MSU Undergraduate Research Fellowship.

10:00 – 10:15 a.m. Dopamine D1 and D2 receptor antagonists differentially affects METH-induced behavioral excitation: The role of the amygdala

Eagle Meeting

***James A. Bradley, Dr. Ilun M. White, Mentor, Department of Psychology, College of Science and Technology**

Two subtypes of dopamine receptors, D1 and D2, are thought to mediate different behavioral outcomes. This study examined the effects of D1 and D2 on behavioral activation induced by methamphetamine (METH). Rats received excitotoxic or sham lesions to the amygdala. After recovery, locomotor activity of rats was tested in the openfield in three phases: habituation, vehicle, and drug injection. METH markedly enhanced locomotion (hyperlocomotion). Both D1 and D2 antagonist suppressed METH-induced hyperlocomotion, with a greater suppression following D1 antagonist. Our results suggest that activation of D1 receptors is necessary for the expression of METH-induced behavioral changes. Currently, we are examining the effects of METH and D1 antagonist on amygdala neurons to see if electrophysiological effects are correlated with METH-induced behavioral changes.

10:15 – 10:30 a.m Break

10:30 – 10:45 a.m. Remote operation and automation of the vhf/uhf system for tracking and controlling the KySat-1 satellite

Eagle Meeting

***Marc B. Beck, Dr. Benjamin K. Malphrus and Jeff A. Kruth, Mentors Space Science Center, College of Science and Technology**

KySat-1 is a CubeSat built by the KentuckySpace consortium, which includes Morehead State University (MSU) as a member institution. KySat-1 will be launched in June 2009 into Low Earth Orbit (LEO). The Space Science Center (SSC) at MSU will serve as primary Earth station for the satellite, using the VHF/UHF antenna system and the 21 Meter Space Tracking Antenna. Since both antenna systems are located on top of a hill which is difficult to reach in inclement weather, a pressing need exists to develop remote controls for these systems from either the control room of the SSC or another location. This research focuses on the development of remote control and automation the VHF/UHF Earth station system. This project is sponsored by the Kentucky Space Grant Consortium.

10:45 – 11:00 a.m. Testing and characterization of the communication and antenna systems of the KySat-1 orbiting satellite

Eagle Meeting

***Jason M. Smathers, Dr. Benjamin K. Malphrus, and Jeff Kruth, Mentors, Space Science Center, College of Science and Technology**

The development of the KySat-1 Orbital is a student lead initiative funded by a consortium of private companies and Universities across Kentucky to design, build, test, and launch a cubesat. The KySpace consortium has developed a bus standard, utilizing a combination of Commercial-Off-the-Shelf CubeSat technology that is rapidly establishing itself for access to space worldwide and proprietary technology for which the consortium is rapidly developing flight heritage. To operate KySat-1, the consortium has established an S-band 21 M Earth station, and two VHF/UHF Earth station systems, with a control center capable of automation of satellite mission support. This presentation involves characterization and testing results of the antenna systems along with a full communications systems test of the engineering model of the satellite.

11:00 – 11:15 a.m. A multiwavelength supernova remnant study of nearby galaxies IC 342 and NGC 4258

Eagle Meeting

***Wayne Staggs, Dr. Thomas Pannuti, Mentor, Space Science Center, College of Science and Technology**

We present a multiwavelength (radio, optical, and X-ray) study of SNRs in the nearby galaxies IC 342 (3.3 Mpc) and NGC 4258 (7.3 Mpc). Our approach is to identify X-ray counterparts to SNRs previously identified by observations made at radio and optical wavelengths and to seek out new candidate X-ray SNRs as soft-spectra sources coincident with HII regions in the host galaxies. Our work relies primarily on archival data from observations made with the *Chandra* X-ray Observatory: its high angular resolution capabilities (~1 arcsecond) are essential for identifying X-ray counterparts with high positional accuracy to SNRs detected at other wavelengths. Our work is supported by a grant from the Kentucky Space Grants Consortium.

11:15 – 11:30 a.m. An X-ray study of supernova remnants in nearby starburst galaxies

Eagle Meeting

***Daniel C. Graves, Dr. Thomas G. Pannuti, Mentor, Space Science Center, College of Science and Technology**

Supernova explosions are among the most energetic events in the universe, shock-heating surrounding gas to extreme temperatures (10^7K) and leaving behind expanding shells of stellar ejecta known as supernova remnants (SNRs). Observations of Galactic SNRs are difficult due to strong absorption along lines of sight as well as large uncertainties in the distance estimates to these sources. Observing SNRs in galaxies located away from the Galactic plane eliminates the problems associated with absorption and distance uncertainties are reduced to those associated with the host galaxies. This talk will focus on the analysis of archival data from observations made with the *Chandra* X-ray observatory of two nearby starburst galaxies (M82 and NGC253) in the search for new SNRs and counterparts to those previously detected at other wavelength.

Concurrent Session - Riggle Room

9:00- 9:15 a.m. **The effect of initial market grade on carcass ultrasound characteristics of feeder goats**

Riggle

***Heather Nauman, B. Galbreath, Drs. Rebecca Miculinich, Tammy Platt, and Troy Wistuba, Mentors, Department of Agricultural and Human Sciences, College of Science and Technology**

The purpose of this project was to determine the impact of initial market grade on carcass ultrasound characteristics of feeder goats. Forty five kids (20.9 ± 2.9 kg) were purchased at local auction on January 14, 2007, processed upon arrival and allowed *ad libitum* access to feed and water during a 14 d adaptation phase. Goats were then visually evaluated and classified into one of three market grades. The analysis of variance was generated using PROC MIXED (SAS Inst., Cary, NC), the model included market grade, date, and the interaction of market grade and date. Least-squares means were calculated and separated using pair-wise t-tests (PDIFF option). Market grade 1 goats had the largest longissimus muscle areas, followed by market grade 2 goats and finally market grade 3 goats. However, there were no differences in final subcutaneous fat measurements between market grades of goats. Market grade classification did have a significant impact ($P < 0.05$) on rump muscle depth, where market grade 1 goats had the largest amount of rump muscle depth when compared to the other two market grades. Results of the present study indicate that initial market grade classification is an accurate estimation of carcass muscle and fat composition and thus carcass yields.

9:15-9:30 a.m. **The effect of initial market grade on linear measurements and carcass characteristics of feeder goats**

Riggle

***Jessica Robinette, B. Galbreath, Drs. Rebecca Miculinich, Tammy Platt, and Troy Wistuba, Mentors, Department of Agricultural and Human Sciences, College of Science and Technology**

The purpose of this project was to determine the impact of initial market grade on linear and carcass characteristics of Boer goat buck kids. Forty five kids (20.9 ± 2.9 kg) were purchased at local auction on January 14, 2007, processed upon arrival and allowed *ad libitum* access to feed and water during a 14 d adaptation phase. Goats were then visually evaluated and classified into one of three market grades. The analysis of variance was generated using PROC MIXED (SAS Inst., Cary, NC), the model included market grade. Market grade 1 and 2 goats did have larger chest widths, forearm circumferences, and cannon bone circumferences when compared to market grade 3 goats. Additionally, market grade 3 goats had longer lengths than market grade 1 goats ($P < 0.05$). Market grade classification had no impact on rack or loin length. After 45 d on feed, goats with a market grade 1 had greater ($P < 0.05$) end weights than goats in market grade 3. Results of the present study indicate that initial market grade classification is a relatively accurate estimation of final carcass yields.

9:30 – 9:45 a.m. **International labor, custom harvesting, and the H2-A Visa: Wither American farm labor?**

Riggle

***Eric Patton, Dr. Jason P. Holcomb, Mentor, Department of Geography, Government, and History, Caudill College of Humanities**

Custom grain and forage harvesting operations in the Great Plains continue to hire international labor through the federal government's H2-A temporary or seasonal agricultural work visa. Labor source countries include Australia, New Zealand, South Africa, and countries in Europe. Data reveal that many other agricultural operations also employ foreign labor. More than one hundred custom harvesting operations hired foreign labor in 2006, 2007, and 2008. Surveys of these operations show that many have difficulties in hiring American workers, while others have found methods of recruiting enough Americans. Recent changes in H2-A regulations will make hiring international employees more difficult in 2009. This work was supported by an MSU Undergraduate Research Fellowship and a Morehead State University-Funded Research Grant.

9:45 – 10:00 a.m. Screening of *Lactobacillus brevis* 1E1 for pro- and anti-inflammatory effects in a cell culture system

Riggle

***Mike Mann, R. Pitzer, Drs. E. Davis, Tammy Platt, Rebecca Miculinich, and Troy Wistuba, Mentors, Department of Agricultural and Human Sciences, College of Science and Technology**

Lactobacillus brevis 1E1 has been utilized as a direct-fed microbial added to milk replacer to supplement piglets during the lactation period. Studies of lymphocyte subpopulations using flow cytometry has shown *L. brevis* 1E1 to have anti-inflammatory properties systemically and in the gastrointestinal tract of piglets. Moreover, *L. brevis* 1E1 has the capability to minimize the pathogenic load in the gastrointestinal tract. Therefore, this study evaluated cytokine profiles to determine the immunological responses of the IEC-6 rat intestinal epithelial cell line to *L. brevis* 1E1 alone and in the presence of a challenge. The authors were unable to draw a definitive conclusion from this data. However, the study is being repeated currently utilizing PCR data. This research was supported by the Undergraduate Research Fellowship program.

10:00 – 10:15 a.m. The effects of calcium channel antagonists on osteoblasts grown in environments devoid of estrogenic compounds

Riggle

***Courtney Forbis, *Savannah Slone, Dr. Darrin DeMoss, and Dr. Michael Fultz, Mentors, Department of Biological and Environmental Sciences, College of Science & Technology**

Calcium channel antagonists are utilized to block voltage-regulated L-type calcium channels, decreasing Ca²⁺ flow into or out of cells. To decipher the mechanism through which estrogen elicits its action on osteoblasts, experimentation necessitated a culturing environment reduced in estrogenic compounds. The standard protocol employed reduces the concentration of FBS to 0% through successive, 24-hour incubations with diminishing amounts of total FBS (1%, 0.1%, and 0%). The protocol does not appear to alter the viability, cell morphology, or osteoblast phenotype of the cell lines utilized (7F2) when compared to control cells grown in various concentrations of FBS. This study was specifically designed to observe the effects of Diltiazem, Verapamil, and Nifedipine on the viability of one osteoblast-like cell line (7F2) cultured in a minimal estrogen environment. Funding for this project has been provided by the Morehead State University Undergraduate Research Fellowship and the National Institutes of Health (NIH-INBRE 5P20RR16481-08).

10:15 – 10:30 a.m Break

10:30 – 10:45 a.m. Characterization of osteoblastic properties of 7F2 and UMR-106 cultures after acclimation to reduced levels of fetal bovine serum

Riggle

***G.C. Howard, S. Ganguly, L.A. Ashley, C.M. Pendleton, R.D. Grey, L.D. Castle, Dr's. D.K. Peyton, M.E. Fultz, and D.L. DeMoss, Mentors, Department of Biological and Environmental Sciences, College of Science & Technology**

Estrogen plays an important role in skeletal physiology by maintaining a remodeling balance between the activity of osteoblasts and osteoclasts. To decipher the mechanism through which estrogen elicits its action on osteoblasts, experimentation necessitated the development of a culturing environment reduced in estrogenic compounds. The selected media (OPTI-MEM) is enriched to sustain cultures under reduced fetal bovine serum (FBS) conditions and is devoid of the pH indicator phenol red, a suspected estrogenic agent. This protocol reduced the concentration of FBS supplementation to 0% through successive, 24-hour incubations with diminishing amounts of total FBS. The protocol does not appear to alter the viability, cell morphology or osteoblast-like phenotype of 7F2 and UMR-106 cell lines when compared to control cells grown in various concentrations of FBS. Funding for this project has been provided by the Morehead State University Undergraduate Research Fellowship and the National Institutes of Health (NIH-INBRE 5P20RR16481-08).

10:45 – 11:00 a.m. Can woody plant diversity be used as a surrogate for bryophyte diversity?: A preliminary answer

Riggle

***Channing Richardson, Dr. Allen C. Risk, Mentor, Department of Biological and Environmental Sciences, College of Science and Technology**

In order to assess diversity patterns among different plant groups, all woody plant and bryophyte species were identified in four 10 X 20m plots at Spaws Creek, Menifee County, Kentucky. The plots were evenly distributed between upland (above cliff line) and lowland (below cliff line) sites. A total of 34 woody, 20 liverwort, and 42 moss taxa were identified. The average liverwort to moss ratio below the cliff line was 0.6. The average liverwort to moss ratio above the cliff line was 0.325. There were 1.6 times as many moss species as woody plant species in the lowland plots. Above the cliff line there were 2.3 times as many mosses as woody plants. Research was supported by an MSU Research Undergraduate Fellowship.

11:00 – 11:15 a.m. Suspended sediment in the Dry Creek watershed, Rowan County, Kentucky

Riggle

***Samuel Williams, Dr. Steven K. Reid, Mentor, Department of Physical Sciences, College of Science and Technology, and Dr. Christine McMichael, Mentor, Institute for Regional Analysis and Public Policy**

The 2007 Kentucky Environmental and Public Protection Cabinet has identified a segment of Dry Creek from its mouth to 0.5 miles upstream as partially supporting aquatic life due to sedimentation/siltation and organic enrichment (sewage). Results of data collection and field reconnaissance between March 2007 and February 2009 suggest that bank erosion in the upper half of the watershed may be a major source of suspended sediment in Dry Creek. Results also suggest that poor land use and construction in the Morgan Fork sub-watershed contribute significant suspended sediment to lower reaches of Dry Creek. Studies have been initiated to quantify sediment contributions from bank instability and HWY 519 construction. Financial support was provided from Kentucky Waterways Alliance Grant #C9994861-4.

11:15 – 11:30 a.m. Stand age and annual tree growth rates in Spaws Creek gorge, Menifee County, Kentucky

Riggle

***Aaron A. Dourson, Dr. Allen C. Risk, Mentor, Department of Biological and Environmental Sciences, College of Science and Technology**

Stand age and annual tree growth rates, in relation to aspect and slope position, were determined by tree cores collected from six 10 x 20m plots at Spaws Creek, Menifee County, Kentucky. The hypotheses evaluated were that mean growth rates would be the same in north aspect and south aspect plots; mean growth rates would be the same in cliff, middle, and creek plots; and that tree size is a good predictor of tree age. There was a significant difference found between the annual growth rates with respect to slope position, but not for slope aspect. Size was not a good predictor of tree age. Research was supported by grants from the Kentucky Academy of Science and Morehead State University.

P. 1. Basic personal finance knowledge: Who knows what and what do we need to know?

Crager *Erica Belmont, Dr. Janet Ratliff, Mentor, Department of Accounting, Economics, and Finance, College of Business

This study tests the personal financial knowledge of students prior to and after taking a personal finance course in the spring semester of 2008 at a regional university in Kentucky. Overall knowledge of the subject matter improves with education; however, the effect of family background of personal financial knowledge was found to be statistically significant when compared to pre test and post test scores. In addition, practitioners and professionals contribute knowledge accumulated from years of experience in the field of finances to recommend that educators focus on teaching the most basic concepts of personal finance to achieve the most significant impact to improve students' lives. This research study was supported by a MSU Undergraduate Research Fellowship.

P. 2. Exploring the impact of codes of ethics on behavioral intentions in the workplace

Crager *Brandon Leishman, Dr. Lindsey N. Godwin, Mentor, Department of Management Marketing, and Real Estate, College of Business

Given the mixed findings of prior research, our study sought to further explore the impact of codes of ethics on employees' intentions to engage in ethically questionable behaviors. Using an experiential design, the study involved manipulating the attribution particular behaviors as to being within or outside the scope of an organization's code of ethics to determine the impact such attribution has on the respondent's reported likelihood to engage in that behavior. Findings suggest that individuals were least likely to respond with an intention to engage in a questionable behavior if the behavior was specifically prohibited by a code of ethics. We also found that simply reminding participants that a code of ethics exists also makes them less likely to engage in questionable acts. This research was supported by the MSU Undergraduate Research Fellowship program.

P. 3. The empirical evidence of the virtuous circular relationships between firm innovation and performance

Crager *Nathan Mills, Dr. Fatma Mohamed, Mentor, Department of Management, Marketing, and Real Estate, College of Business

The empirical literature on the relationship between innovation and economic performance has mostly focused on the economic impact of innovation on firm performance, and tends to overlook the 'reverse' relationship. That is, the extent to which innovation is spurred by past economic performance. The literature shows that the funding of risky, long-term and large-scale innovation projects requires substantial financial resources. And these projects are facilitated by healthy economic track records from firms that are associated with high growth rates, large profits and healthy cash flows. The presence of these circular relationships between the innovativeness and economic performance of firms has been demonstrated so far mainly through case studies and qualitative evidence. However, there is no empirical evidence showing the presence and strength of such a link in the high tech industry in general and in industries characterized by indirect network externalities in particular. Therefore, this study focuses on the virtuous circles and long-lasting relationships between the innovativeness and economic performance of firms using longitudinal data on innovation and economic performance in the software industry.

P. 4. Civic capacity and community development in Appalachia: The relationship between political culture and social capital

Crager

****Amy Denham, *David Lee Daniel Jr., Britney Huron, Billy Ousley, *Eric Patton, *Courtney Perry, John Taylor, *Samantha Yaeckel, Dr. Stephen Lange, Mentor, Institute for Regional Analysis and Public Policy***

Civic capacity, including human capital and social capital, are known to impact community and economic development positively. This study examines the relationship between social capital and political culture in the United States and finds that traditionalistic political cultures consistently have less social capital than moralistic political cultures, regardless of the level of economic prosperity. As a result, different development approaches are likely to have different degrees of success depending upon the political culture of the region. These findings have consequences for the traditional economic development approach used by the Appalachian Regional Commission and the participatory community development approach used by the NewCities Institute. This research was supported by the Appalachian Teaching Project funded by the Appalachian Regional Commission.

P. 5. National prison population trends, with particular attention to the Commonwealth of Kentucky

Crager

****Ashley Adkins, Dr. Paul D. Steele, Mentor, Center for Justice Studies, Institute for Regional Analysis and Public Policy***

The purpose of this research is to further the understanding of the influence of social factors on growing incarceration rates. Comparisons were made between states with rapidly growing prison populations, such as Kentucky, slow-growing states, and the nation as a whole. Relying on secondary data from federal and state agencies, we examine the relative influence of changes in the State's criminal incidents and arrests, demographic and economic indicators, and criminal justice statutes and operational policies on overall incarceration trends and those for various subpopulations of prisoners. Through policy analysis we conclude that statutes and policies have had a relatively strong influence on prison populations. The support for this project was provided by the Kentucky Department of Corrections, and the MSU Undergraduate Research Fellow Program.

P. 6. Preliminary comparison of water samples collected using Teledyne portable autosampler and EPA field methods

Crager

****Susan Brown, Sam Williams, Alex Hunley, April Haight, and Drs. Brian C. Reeder and Steve Reid, Mentors, Institute for Regional Analysis and Public Policy***

This study compares laboratory data of water samples collected using Teledyne portable autosamplers and standard EPA field method (grab) collected water samples. By examining the two collection methods, we are determining if the laboratory results are the same for both field collection methods. The study compared water samples collected by autosamplers to simultaneously collected grab samples. Water samples were analyzed using commonly used tests (alkalinity, organic carbon, organic nitrogen, total phosphorus, total suspended sediments, dissolved phosphorus, dissolved ammonium, dissolved nitrate, dissolved sulfate, and total iron). The two data sets, autosampler versus grab, show a significant difference between many of the traditional grab and autosampler collected water samples. However, some of the nutrient results were comparable between the collection methods.

P. 7. Using gaming technology to promote physical activity in middle school students

Crager *Sara Fitzpatrick, *Amy Sexton, Dr. Monica Magner and Dr. Gina Blunt, Mentors, Department of Health, Physical Education and Sport Sciences, College of Education

The Martin County on the Move (MCOTM) Project is focused on reducing obesity and the risk of obesity by increasing physical activity in middle school students. The HorsePower Challenge (HPC), created by Humana, Inc. seeks to increase activity by integrating student fitness and gaming technology. The HPC is an online game where students create an avatar, track their progress and see their steps online. Steps are calculated and uploaded wirelessly using an actiped, an accelerometer attached to students' shoes. The actipeds were an important part of the study; however, they created some technology issues. This study outlines benefits and drawbacks of gaming technology and the effects it has on physical activity. Acknowledgement: Federal grant from the Department of Health and Human Services.

P. 8. Textbooks and banjos: Incorporating regional heritage into NCATE accreditation web pages

Crager *Brianna Swetnam, Dr. Lesia Lennex, Mentor, Department of Health, Physical Education, and Sports Sciences, College of Education

The National Council for Accreditation of Teacher Education (NCATE) is responsible for accrediting and upholding the standards of schools, departments, and colleges of education in the U.S. As part of the accreditation process, universities construct web pages to allow officials to access the necessary information to grant accreditation. A very important part of the accreditation visit is to see how regional heritage impacts teacher education through appropriate incorporation of regional ideas, themes, and art.

P. 9. Communication and social dynamics of Web space within educational constructs P-16

Crager *Heather Flynn, Dr. Lesia Lennex, Mentor, Department of Health, Physical Education, and Sport Sciences, College of Education

Professional Web sites have become a major source for teachers and colleges of education in communicating with others. Pure information distribution is a function of Web pages. However, other factors may be more significant in actual constituent use of educational pages. Tone and cultural appeal of the site also play roles in the site's proficiency and attraction. Using the data analysis from selected National Council for the Accreditation of Teacher Education (NCATE) sites (N=10) and Kentucky Public School Teacher Web pages (N=224), this researcher has determined that nearly half of the pages were negatively intoned. More than half of all the pages also lacked either majority or other cultural identification. This work was supported through Undergraduate Research Fellowship.

P. 10. Use of the Body Media SenseWear Pro in physical activity research in a college population

Crager *Christopher Conklin, Dr. Gina Blunt and Dr. Jennifer Dearden, Mentors, Department of Health, Physical Education and Sport Sciences, College of Education

Sedentary lifestyle is a major health concern. The Body Media SenseWear Pro 3 Armband (BMSPA) is a valid and reliable measure for a variety of physiological data, including energy expenditure (EE) and step counts (SC). The pilot study utilized the BMSPA as an outcome measure to determine if immediate feedback of step counts increases physical activity (PA) levels in a college population. Among three groups; armband-only treatment group (AT), armband plus pedometer treatment group (AP), and the control group (AC), there was no difference in PA levels, $p=0.15$ (SC) and $p=0.42$ (EE). Based on the limitation that most of the subjects represented a homogenous group (i.e. current exercisers), a more heterogeneous subject pool has been identified for a follow-up study. Sponsored by UG Research Fellowship.

P. 11. Student fans' motives for attending athletic events and perceptions on a student incentive program

Crager *Stephanie A. Teater, Dr. Steve Chen, Mentor, Department of Health, Physical Education, and Sport Sciences, College of Education

This study examines the collegiate students' motives for attending athletic events and their perceptions on creating a student incentive program to reward student participation. Based on the responses from 224 participants, the students primarily attend the events due to free of charge and social gathering functions. Bad weather and time-conflict are the key barriers to hinder student attendance. Unlike their female counterparts, the male participants' were more likely to be drawn to the games due to excitement and entertainment, instead of pricy gift items. To further increase the student participation for the events, the athletic department must actively reward those who travel a greater distance to attend or spend more money on athletic merchandises. Practical strategies for implementing a reward program are further discussed.

P. 12. Improving accessibility for individuals with disabilities at Morehead State University

Crager *Amanda Beal, Leanna Bloomfield, Deidre Crockett, Nadia Croley, John Duggins, Melinda Engle-Smith, Amanda Faust, Ashley Followell, Venesa Forrest, Megan Harp, Aryn Howland, Justin Jones, Emma Keough, Tracy Lair, Rebekah Lane, Bradley Lewis, Stacy Liles, Corey Martin, Amber Oney, Crystal Osborne, Liz Razor, Heather Smith, Pamela Strassell, Nichole Taylor, Leslie Walker, Cassandra Wilson, Sarah R. Hawkins, Ed.D, Mentor, EDSP 350 Characteristics of Individuals with Intellectual Disabilities and Orthopedic Impairments, Department of Curriculum and Instruction, College of Education

Twenty buildings across Morehead State University's main campus were rated using an Accessibility Checklist developed by the Kentucky Cabinet for Workforce Development and the Kentucky Department of Vocational Rehabilitation, 2001 Edition. The four areas assessed were: Parking; Walks, Curbs, and Ramps; Entrances, Corridors, and Stairs; Public Restrooms; and Public Telephones and Water Fountains. The students' findings indicated a variety of easily corrected architectural and communication barriers that could be encountered by a person with a disability. The two most frequent violations fell under the categories of Signage, and Public Restrooms.

P. 13. Another chance at life and learning

Crager *Jayme C. Zirkle, Dr. Kimberly Peterson, Mentor, Department of Agricultural and Human Sciences, College of Science and Technology, and Dr. Mattie Decker, Mentor, Department of Curriculum and Instruction, College of Education

Another Chance at Life and Learning is a collaborative effort between Morehead State University and the Kentucky Department of Juvenile Justice. The program involves retired racing greyhounds and at-risk youth at the Morehead Youth Development Center. The youth provide basic obedience training to the dogs which help to acclimate them in their transfer process into adoptive homes. The youth are exposed to careers in animal health when visiting MSU's veterinary technology program. This project emphasizes animal assisted learning and the possible outcomes associated with the human animal bond. This project is supported by the MSU Center for Regional Engagement, Kentucky Veterinary Medical Association Foundation, and Greyhound Pets of America-Louisville Chapter.

P. 14. Guidelines for Administering a Little League Baseball Program: Safety First

Crager **Daniel Lorenz, Dr. Julia Ann Hypes and Dr. Michael Hypes, Mentors, Department of Health, Physical Education, and Sport Sciences, College of Education*

The project is the result of a qualitative research study with a document analysis methodology conducted over the last three years. Phase I of the project was a comprehensive review and categorization of all Little League negligence cases. The Phase II document analysis narrowed the legal transcripts into categories indicative of landmark cases. Little League Baseball rules and regulations were analyzed and changes to those rules and regulations as impacted by the landmark case decisions were noted. Phase III concludes with identifying risk management best practices and their integration into Little League Baseball. A little league baseball facility model and supporting facility management plan was developed to illustrate areas of risk. A manuscript and legal case analysis have been submitted for consideration in professional journals. This project was supported through the UG Fellowship program.

P. 15. A chance to read: A solution to reading fluency problems

Crager **Brittany Herrera, Kim Nettleton and Dr. Sara Lindsey, Mentors, Department of Curriculum and Instruction, College of Education*

Dyslexia is a disorder revolving around brain abnormalities. This research focuses on dyslexia and reading fluency. Participating schools identified students with below-grade-level reading fluency. Identified students were examined to determine if the RAD Prism could provide positive intervention. A new assistive device, created in Kentucky, the RAD Prism has been used by over 1300 people, who claim significant improvement in reading fluency. This quantitative study will determine if the RAD Prism is an effective assistive device for struggling readers. Pre and post study data will be evaluated to measure and document changes in reading fluency. The results will be analyzed and used to attract new participants and gain a deeper understanding of dyslexia and the possible relief of one of its damaging aspects.

P. 16. Assessment of oral communication: A review and explication of principles and practices

Crager **David Gillum, Dr. Michael Moore, Mentor, Department of Communication and Theatre, Caudill College of Humanities*

The National Communication Association (NCA) has commissioned the preparation of a comprehensive review of scholarship on the assessment of oral communication for publication in the association's journal *Communication Education*. This study is a component of the comprehensive review and is focused specifically on establishing a database of scholarly papers on communication assessment presented at National Communication Association conferences since 1973. The study requires a review of both online and hard copy convention programs, identifying conference papers that meet specific keyword criteria and entering the relevant information into a bibliographic management system (RefWorks). This will be merged with bibliographic data gathered from national and regional journals and other relevant publications and subjected to a thematic content analysis.

P. 17. Results of Howard Gardner's theory of multiple intelligences and the correlation between three university groups

Crager **Mallory Draughn, Dr. June Grice, Mentor, Department of Music, Caudill College of Humanities*

This research evaluated the intelligences of three groups of students at MSU in 2008-2009 using a national research package. The groups surveyed included music, education, and physical education majors. The package included a survey that students completed that showed intelligence factors as defined in Howard Gardner's Theory of Multiple Intelligences.

This project involved two stages. The data analysis of the first stage was completed in the spring of 2008 and included the correlation of intelligences of two groups – music and education majors. The second part of the research was conducted in spring 2009 and included an additional group – physical education majors. Results will be shared at the Celebration of Student Scholarship. This research was funded by MSU's Undergraduate Fellowship through the Department of Music.

P. 18. Image as metaphor: Appalachian latin connections in mural making

Crager **Whitney Sibcy, Dr. Emma Gillespie Perkins, Mentor, Department of Art and Interdisciplinary Cultural Studies, Caudill College of Humanities*

Cross cultural image development and community service through the arts provides rich opportunities for pre service teachers. This research includes subject matter development for murals, collaboration challenges, universal issues of marginalized groups and issues of poverty. Service learning through the arts is explored as a pedagogy of community populations and social issues. The work of and communication with Latina activist, Judy Baca is utilized as a model for community pedagogy.

P. 19. Lesbian and gay perceptions of stigma: Religion and homosexuality in the bible belt

Crager **Michelle Fiore, Dr. Bernadette Barton, and Dr. Eric Swank, Mentors, Department of Sociology, Social Work, and Criminology, Caudill College of Humanities*

This quantitative study focuses on the extent, frequency and degree in which certain types of stigma happen to gay and lesbian persons in the Bible Belt. Using results from an online survey, this presentation explores the levels of enacted stigma (obvious, preformed acts of hate based on sexual preference) and felt stigma (internalized ideas that society dislikes and discriminates against homosexuals) that surveyed individuals reported. The survey's responses show the levels of hate, sexual and violent crimes (Enacted). Informants also answered questions about their perceptions of support from various institutions (Felt). This presentation examines gay and lesbian perceptions of the effects of felt and enacted stigma on homosexuals living in a staunchly conservative, religion-based environment.

P. 20. Teaching and learning about children victimized by war in French adolescent african literature

Crager **Lauren Decker, Dr. John Secor, Mentor, Department of English, Foreign Languages, and Philosophy, Caudill College of Humanities*

In Africa, war is a constant threat that leaves behind a myriad of devastated communities, refugees, and broken lives. For the numerous survivors, the singular task of coping with the atrocities committed proves to be a daunting struggle, let alone the process of healing and teaching the next generation about their broken history. The question we seek to answer is this: How is literature dealing with significant problems such as genocide, and how do written sources go about presenting violence to younger readers through storylines and corresponding illustrations? This study investigates the healing of a culture through literature and art, using three children's books: *Charley en guerre*, *L'enfant de la guerre*, and *Aissata et Tatihou* as a foundation for learning.

P. 21. Campus television as a canvas for multicultural awareness and creativity at Morehead State University

Crager **Nyshia Taylor, Drs. Ritta Abell and Ann Andaloro, Mentors, Department of Communication and Theatre, Caudill College of Humanities*

Using MSU's channel 77, multicultural issues concerning campus, region, and country we address. Topics from cultural awareness to political tension were raised to provide students with a better feeling of connectivity to the cultures represented throughout the university. Students, faculty, and staff were called upon to present their knowledge on topics discussed in the form of interviews, showcase talents developed, and present opinions on the topics covered. By presenting Morehead State University with information in a creative medium, it is hoped that the audience will use their cultural knowledge to improve cultural relations on campus, in organizations, in their future jobs, and encourage students to explore other ways of thinking.

P. 22. The altered anatomies project: The moving body in animation

Crager **Karri Smith, Bobby Campbell, Mentor, Department of Art, Caudill College of Humanities*

This project facilitated student work in the creative production of a professional level animation project. The student and professor developed hand-drawn, frame-by-frame animated sequences that were extended with the special capabilities of Adobe Illustrator, Adobe Flash and Adobe Premiere software. These sequences focused primarily on creative sequences of figurative movement. In the future, each of the sequences will be combined, remixed or edited into final animations to be submitted for entry in animation competitions. The project extended the student's brainstorming, drawing, sequencing and animating abilities and broadened her professional opportunities by providing focused experience through a competitive studio project. This project has been supported by the MSU Undergraduate Research Fellowship program.

P. 23. Eastern Kentucky arts project

Crager **Kendrick Holbrook, *Kimberly L. Gibson, Dr. Joy Gritton and Dr. John Hennen, Mentors, Department of Art and Department of Appalachian Studies, Caudill College of Humanities*

The Eastern Kentucky Arts Project (EKAP) is in its third year of identifying and documenting arts resources in Kentucky's Appalachian counties. Since first presented at the 2007 Celebration of Student Scholarship, the project's website is being launched with a new oral history component initiated. The site will provide information on public school, technical college, and university arts instruction, community art groups, public art and historic architecture, special grant-funded initiatives, practicing artists, art and cultural heritage centers, and exhibition and sales venues. The project also seeks to identify arts related need in the region and thus potential venues for student service learning projects.

P. 24. Student voices: Reflections on service-learning, public relations and literacy

Crager **Amanda Romito, Dr. Janet McCoy, Mentor, Department of Communication and Theatre, Caudill College of Humanities*

The Adult Learning Center was founded to promote literacy and learning in Morehead, Kentucky and the surrounding county. The service-learning project "Rowan County Reads" was created to support their mission. Students in public relations courses at Morehead State University applied the program planning skills they learned in the classroom to support this literacy project in their community. Using textual analysis, this study explores civic engagement from the students' perspectives through an analysis of their reflective journals. This study was supported by an Undergraduate Research Fellowship. The actual service-learning project has been supported by literacy grants from the Honor Society of Phi Kappa Phi (2007 and 2008) and a Student Civic Engagement Grant from MSU's Center for Regional Engagement (2008).

P. 25. Archetypal Women: Representations of the Feminine in French Medieval Literature

Crager *Rachel Messer, Karen Taylor, Mentor, Department of English, Foreign Languages, and Philosophy, Caudill College of Humanities

The purpose of this study is to examine some of the different feminine archetypes of the French Middle Ages through three critical lenses; intertextuality, psychology, and feminism. First, a comparison of the Biblical Eve with that of her character in the medieval drama “*Le Jeu d’Adam*” (anonymous) will reveal specific rhetorical practices applied to the reading and development of Eve’s character that are used to portray her in an increasingly negative light. Second, the study will focus upon Mary as she is portrayed as Violent Virgin in the 13th century dramatic text *Le Miracle de Théophile* by Rutebeuf. Her role in the play will be examined in terms of the psychology of parenting, as well as in terms of language, action, and dramatic reproduction of certain visual and architectural portrayals of the Theophilus legend extant in church carvings and windows from the same period in Northern France. Third and finally, the role of the quest in *Le Chevalier au Lion* by Chrétien de Troyes will be re-examined using feminist criticism to extrapolate a personal feminine quest from the more typically studied masculine quest for redemption.

P. 26. Incidence of Bovine Viral Diarrhea Virus-persistent infection in Kentucky cattle

Crager *Latissa O’Cull, Shannon Touroo, Dr. Troy Wistuba, Dr. Phil Prater, Mentors, Department of Agricultural and Human Sciences, College of Science and Technology

Bovine Virus Diarrhea (BVD) is a devastating disease of all cattle. The disease reduces productivity and increases death loss of cattle. Clinical signs of mucosal erosions and diarrhea have obvious impacts on infected animals, but more devastating are those animals that do not thrive through lower weight gains, increased disease susceptibility, and diminished reproductive performance. Controlling BVD is a daunting task. Key to the success of these programs is testing, vaccinations and bio-security. The major source of BVD infection is persistently infected animals (PI’s). PI’s result from cows being exposed to the virus during pregnancy and the fetal calf becoming infected. Although frequently these calves show no signs of illness themselves, they shed the virus in such great numbers that even well-vaccinated animals may become infected. This project seeks to determine the approximate infection rate of BVD-PI cattle in the State of Kentucky, with a particular focus on Eastern Kentucky cattle farms. Cattle will be sampled by obtaining a single ear notch from the edge of the pinna of the ear. Capture antigen-ELISA: BVD-PI testing will be used in the analysis of determining whether cattle are positive or negative for BVD-PI. This is a specific one time test. Overall, state-wide occurrence of BVD-PI will be tabulated. The data collected will also be analyzed (ANOVA) for age, weight, farm size, management scheme, and herd health / vaccination status. The ultimate goal of this project will be to identify problem herds in our region and state. Outcomes of the data analysis will be disseminated throughout the state as a spear-head for developing a statewide BVD-PI Control program This project is funded through an MSU Regional Engagement Grant.

P. 27. I believe in the future of agriculture

Crager *Sarah Picklesimer, Drs. Rebecca Miculinich, Tammy M. Platt, J. Mike Phillips, Mentors, Department of Agricultural and Human Sciences, College of Science and Technology

High school agriculture education is vastly important for the future of agriculture in the United States. The continuation of successful agricultural production will directly influence the maintenance of an adequate world food supply. Successful high school agriculture education programs are pivotal to this success. Furthermore, programs such as FFA are crucial learning tools for these youth. In fact, today there are over 507,000 members nationwide of multiple ethnic groups comprising 7,439 chapters and involving over 11,000 educators. As long as these programs persist, the future of agriculture is safe.

P. 28. No-till agriculture

Crager

***Kevin A. Dillon, Dr. J.M. Phillips, Mentor, Department of Agricultural and Human Sciences, College of Science and Technology**

Today's era of agriculture presents various challenges to farmers, ranchers, and growers in the form of extremely high input prices and a high priority of conservation in the field. George McKibben, an agronomist with the University of Illinois, founded no-till in 1966. The no-till system eliminates plowing, but includes the utilization of herbicides to control weeds. Projections are that 60% of all cropland in the U.S. will be planted via no-till by 2010. Implementing no-till presents advantages and disadvantages. Advantages include reducing soil erosion, building of organic matter, reducing soil compaction, increased soil tilth, water conservation, and increased efficiency in time and energy. While there are many advantages, there are some disadvantages; no-till drills and planters and parts for these pieces of equipment are very costly, and the use of no-till requires increased management concerning herbicide, seed, and fertilizer. The advantages of no-till greatly outweigh the disadvantages and many growers plant all their crops via no-till.

P. 29. Comparison of phytophthora tolerance between rps1c and rps1k isolines in soybean

Crager

***Kevin A. Dillon, Dr. J.M. Phillips, Mentor, Department of Agricultural and Human Sciences, College of Science and Technology**

Phytophthora is a disease in soybeans associated with wet soil conditions commonly occurring on heavy, poorly-drained or compacted soils. The optimum temperature for infection is 60-80°F and the severity of loss depends on environmental conditions, Phytophthora races present in field, and the genetic resistance or tolerance of soybean variety. Yield losses from phytophthora infection can range from 5-50% of the total crop. To make the comparison three segregating experimental lines were grown in South America for purification purposes, plant pulls were done for the Rps1k Phytophthora gene and Rps1c Phytophthora gene. Scoring of PRT (Phytophthora Tolerance) was done on a 1-9 scale with 1 equaling a dead plant and 9 equaling a completely healthy root system (tap root unaffected). Scoring was based upon root growth and plant death which allowed us to assess the plant's ability for root health and adventitious root regrowth. This study resulted in no statistical differences between the isolines investigated; however, anecdotal observations of plant root systems did show some general tendencies.

P. 30. The importance of involving veterinary technology students in service projects in underserved areas

Crager

***Whitney Cantrell, Jordan Wuthrich, Drs. Kimberly Peterson, Eric Peterson, Michael Gotchey, Mentors, Department of Agricultural and Human Sciences, College of Science and Technology**

Previously, the Veterinary Technology program has given students experience in the field through a controlled clinical setting at the Derrickson Agricultural complex. However, a service project to spay and neuter dogs and cats in a significantly underserved area (Cabo San Lucas, Mexico) was recently presented to the program. The goals were to promote community engagement through helping control unwanted animal populations, involving students in a community service project in an underserved area, promoting the animal bond in an area where socioeconomic factors create barriers to animal care and improving animal lives. This service project was carried out at the Los Cabos Humane Society over a three day period in which over 100 dogs and cats were sterilized and tested for local diseases. This was accomplished with two veterinary technology program students, three veterinarians and with funding and supplies from Pfizer Animal Health, MSU Foundation, and Los Cabos Humane Society.

P. 31. Disease susceptibility and fruit yield of selected heirloom and hybrid cultivars of tomato (*Solanum lycopersicum*)

Crager *Joshua Riggsby, Jennifer Harman, Derek Bradley, Drs. C. Brent Rogers and Debbie Johnson, Mentors, Department of Agricultural and Human Sciences, College of Science and Technology

A field study was designed to compare selected hybrid to selected heirloom tomato cultivars. Tomato transplants were put in field plots consisting of five plants of each cultivar on a raised bed covered in black plastic. Each variety was replicated three times. Standard production protocols were used. Disease ratings were initiated on July 29, and were taken on a weekly basis until the end of harvest. Fruit harvest began on July 29, 2008, and continued until production dropped below commercially acceptable levels. Disease susceptibility of certain heirloom cultivars was less than or equal to that of some hybrid cultivars. Total fruit yields for the season were highest for the hybrid cultivars, but were not significantly better than the yields of most of the heirloom cultivars.

P. 32. Application of freeze-thaw techniques for release of poly-hydroxyalkanoate inclusions from cells

Crager *Tiffany Stacy, *Jeremy Gayheart, Dr. Douglas Dennis, Mentor, Department of Biological and Environmental Sciences, College of Science and Technology

Researchers have utilized atomic force microscopy to demonstrate the presence of a cytoskeletal-like network on the surface of poly-hydroxyalkanoate inclusions, bacterial storage granules. However, the AFM data suffers from the method of inclusion isolation, which was sonication. This method is harsh, raising the possibility that the network was altered during isolation. A gentler isolation technique would be to subject the cells to repeated freeze-thaw cycles, eliminating the mechanical shear forces inherent in sonication. Nonetheless, it is not clear that this technique is sufficient to accomplish lysis. In this study, freeze-thaw lysis was conducted on bacterial cells under varying conditions and then analyzed via spectrophotometry, phase-contrast microscopy, and atomic force microscopy to see if inclusions could be released gently. The results of these analyses are described.

This work was supported by NIH R15 grant #1 R15 GM085749-01 and an NIH-INBRE grant awarded to the state of Kentucky.

P. 33. Genetic manipulations and presence of *umuDC* operon in *Acinetobacter*

Crager *Abigail Oney, *Tyler Elam, Dr. Janelle Hare, Mentor, Department of Biological and Environmental Sciences, College of Science and Technology

DNA is vulnerable to mutation through elements such as UV irradiation, so to protect genomes, organisms contain certain gene sequences to combat damage, such as the *umuDC* operon which is required for the error prone SOS mutagenesis response to DNA damage. The gram-negative bacterium *Acinetobacter baylyi* has a unique *umuDC* operon. To further elucidate the uniqueness of this operon in the genus, several dot blot assays have been used to identify the presence of these genes in this operon. So as to further identify the function of the genes present, a tetracycline resistance – *sacB* gene cassette was constructed to facilitate the introduction of future, site-directed mutations into the promoter and coding regions of the *umuDC* operon. This work was supported by NIH-INBRE grant #5P20RR16481-09.

P. 34. Effect of Rho kinase inhibition on alpha-actin dynamics in the contracting A7r5 smooth muscle cell

Crager *William R. Hankinson, Suzette M. Pike, Dr. Michael E. Fultz, Mentor, Department of Biological and Environmental Sciences, College of Science and Technology

It has been suggested that remodeling of the cytoskeleton may explain the unique contractile properties exhibited by smooth muscle. We have provided evidence of differential remodeling of the alpha- and beta-actin as well as smooth muscle myosin II cytoskeletal structures, however, the mechanism(s) are not understood. The goal of this project was to test the hypothesis that inhibition of Rho kinase would alter remodeling of the alpha-actin cytoskeleton in A7r5 smooth muscle cells. Cells treated with the specific Rho kinase inhibitor Y-27632 before and after stimulation with PDBu did not undergo normal alpha-actin remodeling and actin cable structure was lost. In addition, resting A7r5 cells were exposed to Y-27632 and after five minutes of exposure, disruption of the α -actin cytoskeleton was evident with an almost complete disruption of the alpha-actin cytoskeleton by 40 minutes exposure. This implicates a critical role of Rho kinase in alpha-actin dynamics in smooth muscle. This research was supported by Undergraduate Research Fellowship and KYBRIN grant (NIH-INBRE 5P20RR16481-07).

P. 35. Diversity and size class distribution of larval dragonflies in Eagle Lake, Morehead, KY

Crager *Amberlee Byrd, Dr. Stephanie M. Welter, Mentor, Department of Biological and Environmental Sciences, College of Science and Technology

Dragonfly larvae play important roles in aquatic ecosystems as part of the food web and also as bio-indicators of habitat and water quality. Conducting surveys to determine diversity and species identity of dragonflies will lend insight into the ecology and health of the surveyed habitat. Dragonfly population structure can also be inferred by examining size class distributions. Surveys of dragonfly larvae were conducted in Fall 2008 and Spring 2009 at Eagle Lake, on Morehead State University's campus, to determine species presence and size class distribution. Eagle Lake supports several species of dragonfly larvae which can be found at a range of size classes. This study is part of a long-term monitoring project. Support for this research was provided by an Undergraduate Fellowship.

P. 36. Interaction of Bisphenol A with copper and the potential for DNA oxidative damage

Crager *Logan W. Murphy, Dr. David Saxon, Mentor, Department of Biological and Environmental Sciences, College of Science and Technology

Some estrogens protect DNA from oxidation while others produce damage. Bisphenol A (BPA), a synthetic estrogen, and a component of linings for bottles, cans, and water pipes, has been linked with increased risk of cancer and birth defects. Reactive oxygen species (ROS) formed by redox interaction of BPA with copper could contribute to DNA damage. Cu(II) reduction to Cu(I) by BPA was observed using bathocuproinedisulfonic acid (BCS). An ROS generating system of H₂O₂ and Cu(II) was used to investigate the effect of BPA on DNA oxidation. Evaluation of electrophorograms indicated that DNA was damaged by the ROS system, neither Cu(II) nor H₂O₂ alone damaged DNA. BPA did not protect DNA. A BPA-copper dependent redox role in DNA damage is being studied. Supported by UG Fellowship.

P. 37. Comparison of pigmentation genes between ornamental koi, *Cyprinus carpio* and the Common Carp, *Cyprinus carpio*

Crager *Megan L. Minch, *Christopher New, Dr. David K. Peyton, Mentor, Department of Biological and Environmental Sciences, College of Science and Technology

This research project will determine if the highly variable pigmentation patterns observed in Japanese ornamental koi (*Cyprinus carpio*) can be linked to genetic variation in the Melanocortin 1 Receptor (MC1R) gene. The MC1R gene is responsible for certain pigmentation traits in all vertebrates studied to date, including brown/red hair color in humans and yellow/black fur color in dogs. In this study we compare the DNA sequence of the MC1R gene in koi to the same gene in the Common Carp, from which the koi is derived. We hypothesize that MCR1 sequence differences will exist in specimens possessing different colors, and elucidate the causal relationship between genetic variation and color in these organisms.

P. 38. Progress on identifying host sources of *Escherichia coli* in the Dry Creek Watershed

Crager *Kristen Platt, *Amy Potter, Dr. Geoffrey W. Gearner, Mentor, Department of Biological and Environmental Sciences, College of Science and Technology

Dry Creek, a tributary of Triplett Creek, in Rowan County, Kentucky, has been the focus of a project to develop a watershed based plan which assesses and identifies sources of a variety of contaminants, including bacterial pathogens, then recommends a suite of best management practices to address stream impairments and improve stream quality. In this study, we have utilized *Escherichia coli* as a surrogate for bacterial pathogens. In an attempt to identify the host sources of *E. coli* in the Dry Creek watershed, a DNA fingerprinting method using the BOX A1R primer in a repetitive sequence polymerase chain reaction (repPCR) of *E. coli* DNA isolated from a variety of known host sources, as well as *E. coli* isolated from a number of sites in Dry Creek, was employed. repPCR products were assessed by agarose gel electrophoresis, producing a pattern of bands in the gel referred to as a DNA fingerprint. Initially, DNA fingerprints of *E. coli* from known host sources were used to construct a phylogenetic tree. Then, DNA fingerprints of *E. coli* isolates collected from Dry Creek were compared to this phylogenetic tree in an attempt to identify the host sources. This work was supported by grants from Kentucky P.R.I.D.E. and the Kentucky Waterways Alliance.

P. 39. Ground station software: A dynamic approach

Crager *Brad Schneider, Dr. Biswajit Panja, Mentor, Department of Mathematics and Computer Science, College of Science and Technology

In the satellite world, there are many pieces of software used to control ground stations. Several iterations of such software exist, mainly as the result of research projects either by universities or the government. Unfortunately, these pieces of software all repeat common mistakes and little improvement in the software is made. The goal of this project is to provide a reusable and extensible application for the manual and automated control of ground stations. Perceived problems in existing ground station software are addressed through the use of a dynamic language, an object-oriented design, and the fact that the program is essentially open source because it is written in an interpreted language. This research was supported by MSU Undergraduate Research Fellowship and a NASA EPSCoR grant. of a plan for a SETI antenna site at HMP.

P. 40. Intrusion detection in mobile networks using data mining techniques

Crager **Christopher R. Estes, Dr. Sherif S. Rashad, Mentor, Department of Mathematics and Computer Science, College of Science and Technology*

Intrusion detection in mobile networks plays an important role to detect and prevent unauthorized access to information in the mobile computing environment. The problem of intrusion detection is easier in wired networks. But it is a difficult problem in mobile networks because of the mobility of nodes and the absence of fixed structures in many of mobile network configurations such as mobile Ad-Hoc networks. The problem of Intrusion detection becomes more difficult in integrated mobile networks, where different structures of mobile networks are integrated to provide better quality of service every time and everywhere. The goal of this research is to design and implement new intrusion detection techniques for mobile networks using data mining technology. The proposed techniques will be based on real-time monitoring and analysis of mobile network activities to detect any possible attacks. This research was supported by MSU Undergraduate Research Fellowship.

P. 41. Cyber classroom: Designing a virtual learning environment

Crager **Brian Schack, Dr. Doug Chatham and Dr. Sherif Rashad, Mentors, Department of Mathematics and Computer Science, College of Science and Technology*

A virtual learning environment (VLE) is a computer program for teaching and learning. This presentation reviews the features and limitations of the current spectrum of VLEs. Then, it establishes how the limitations could be addressed, and it proposes an experimental design for a next-generation VLE. Support for this project comes from Dr. Sherif Rashad and Dr. Doug Chatham.

P. 42. Point and suit probabilities of the card game rook

Crager **Lauren May, Dr. Doug Chatham, Mentor, Department of Mathematics and Computer Science, College of Science and Technology*

This project looked at probabilities in the card game Rook. Probabilities of obtaining a certain number of points were found as well as probabilities of obtaining a certain number of each suit. Point splits were calculated to find the probability of an opponent having x points given the number of points in your hand. The Python programming language was used to develop programs that would calculate the probabilities for a given number of points or given suit. An MSU Undergraduate Research Fellowship supported this research.

P. 43. Hybrid broadcast encryption scheme for heterogeneous mobile ad hoc networks

Crager **Michael A. Blankenship, Dr. Biswajit Panja, Mentor, Department of Mathematics and Computer Science, College of Science and Technology*

By leveraging the increased resources of micro-server nodes, we hope to increase network stability and decrease recovery time in the event of missed beacon messages by using an approach that bridges the interactive and non-interactive methods for message recovery.

P. 44 . Radio frequency logging software (RFLS)

Crager **Michael Blankenship, John Wellman, Russell Fugate, Drs. Dora Ahmadi and Sherif Rashad, Mentors, Department of Mathematics and Computer Science, College of Science and Technology*

A computer based software system which is being developed to use the Radio Frequency Signature (RFS) of the MSU Eagle Student ID cards to electronically record when an individual signs in or out of a room, such as a computer lab for purpose of keeping accurate time sheets for tutors which can automatically be forwarded to the appropriate person(s) who need this information (most likely via e-mail). This system will be easily expandable to include other functionality. The initial plan calls for the use of a localized databases (unique to each location) to store the information of the individual RFS's. The system should be able to perform without the need of an active network, some additional functionality may require a network connection, and centralized database support is intended for a future update.

P. 45. Why students choose to attend Morehead State University

Crager **Donna Daulton, Angela Williamson, Dr. Lloyd Jaisingh, Mentor, Department of Mathematics and Computer Science, College of Science and Technology*

This presentation explores the many different factors that affect a students' decision on which college or university to attend. Variables which were examined included the proximity to home, participation in sports and Greek activities as well as cost of tuition, scholarships and financial aid availability. The presentation will explain the reasons for attending Morehead State University which were discovered by randomly surveying 250 current MSU students and analyzing the results using appropriate statistical procedures.

P. 46. A silent killer...A mathematical voice

Crager **Dionna Hall, Dr. Michael Dobranski, Mentor, Department of Mathematics and Computer Science, College of Science and Technology*

This is an investigation of the study of epidemiology, elementary epidemic models and their critical parameters. This knowledge is applied to investigate the mathematical models used in the administration of antiviral therapy to a homogeneous population who are uninfected and infected with the Human Immunodeficiency Virus (HIV).

P. 47. Magnetic resonance (MR) of the breast: A comparative analysis of MR and mammography and imaging women with dense breast

Crager **Jessica Easterling, Cyndi Gibbs, Mentor, Department of Imaging Sciences, College of Science and Technology*

According to the American Cancer Society, breast cancer is the most common cancer in the United States (US), other than skin cancer. It is the second leading cause of cancer mortality in women, after carcinoma of the lung. With the alarming number of women affected by this disease, it is crucial that an early diagnosis be made. Currently, the "gold" standard for imaging the breast is mammography, with ultrasound and magnetic resonance (MR) serving as adjunct modalities. While mammography continues to be the "screening" instrument of choice for all patients, the researchers hypothesize that it is not the best method for detecting early cancers in patients with dense breasts. As women with known dense breast tissue and a strong family history of breast cancer (mother, aunt), the researchers have relevant concerns with regard to mammography being the best imaging modality to detect breast cancer. A random sample of 50 women with known mammography examinations and magnetic resonance imaging of the breast were reviewed. Using the Radiology Information System (RIS), patient records and images; the researchers reviewed the data of patients undergoing breast imaging studies between November 2006 through January 2009. The study revealed conclusive evidence that women who had magnetic resonance imaging of the breast with comparison to their mammographic examination had a definitive diagnosis.

P. 48. External factors influencing college students' food choices when eating out

Crager *Megan E. Huellemeier, Dr. Donna J. Corley, Mentor, Department of Nursing, College of Science and Technology

College students are vulnerable to poor eating habits. Economic strains, convenience, and individual preferences influence food choices. This study assessed external factors influencing students' food choices when eating out. Forty-four students completed food frequency questionnaires and food choice surveys. Two-thirds of students lived at or below poverty level. Nutritional intake was below USDA recommendations for all food groups. Students ate out three/ four times weekly. Priorities for restaurant selection included (1) cost; (2) taste and; (3) sociality and healthy options. Students selected "fast food" high in calories, fat, sodium, and sugar. Data from this study will guide preventative health interventions targeting college students. This project was supported by the MSU Undergraduate Research Fellowship

P. 49. Provision of healthcare among prison populations: Privatization versus acute care healthcare facilities

Crager *Santana Baugus, *Erica Gentry, *Michelle Hale, *Ashley Wise, NURB 361 Nursing Research, Stephanie Johnson MSN,RN,BC,CNE, Mentor, Department of Nursing, College of Science and Technology

Concerns regarding healthcare for prisoners are surfacing among healthcare providers, reimbursement agencies and community members. Pressing issues among hospital leadership consist of prisoner health care privatization versus prisoner transplantation to community-based settings. These concerns are driven by the degree of health disparities and lack of resources, financial cost and reimbursement and public safety. The delivery of healthcare within a prison setting becomes complex for the incarcerated population has a higher prevalence of severe medical conditions and co-morbidities such as mental health and suicide risks, HIV/AIDS, sexually transmitted diseases, hepatitis and drug/alcohol abuse. The delivery of care to prison populations within the confines of the facility is often disparate and without the same services available as those in community-based,acute care facilities.

P. 50. Perils of Vaccinations: Prevalence of autism diagnosis after childhood vaccinations

Crager *Amanda Conkright, *Chriscia Dove, *Brittany Little, *Kayla Slusher, NURB 361 Nursing Research, Stephanie Johnson MSN,RN,BC,CNE, Mentor, Department of Nursing, College of Science and Technology

As parents, healthcare consumers and community members we have witnessed an increase in the awareness and concerns regarding the risks of childhood vaccinations; specifically the high prevalence of autism diagnosis after vaccination. This relationship between vaccination and autism has provoked parental outcries and rising media attention; which has ignited a frenzied interest among researchers, parents and patient advocates. Autism is a lifelong biological disorder that includes impairment in the child's social interaction and communication skills. Autism does not discriminate among racial or ethnic groups, although it is four times more likely to occur in boys than girls. While there is no known definite precursor to Autism, scientists relate genetics and environmental factors such as childhood vaccines that contain mercury, to the incidence of autism occurrence.

P. 51. Comedy in Chemotherapy: A complementary approach to cancer management

Crager

***Kirstyn Harris, *Jacque Hensley, *Belicia Mullins, *Rebecca Pennington, NURB 361 Nursing Research, Stephanie Johnson MSN,RN,BC,CNE, Mentor, Department of Nursing, College of Science and Technology**

“You have cancer.” These words reverberate through the silence of the night as you attempt to sleep; words that denote a sense of doom. The battle towards overcoming cancer is a long and exhausting process. The priority of cancer care consists of choosing the best treatment options regarding chemotherapy and radiation. Ideally, treating the cancer with chemotherapy or radiation provokes physical healing. Often, the psychosocial and spiritual needs of the cancer patient are neglected. The integration of humor throughout the continuum of cancer care is effective in stress reduction, enhancing the quality of life and alleviating fear and anxiety. Research reveals that focusing on psychological and spiritual health in conjunction with traditional therapy can improve quality of life and promote rapid recovery for the cancer patient.

P. 52. Successful breast feeding: The influence of lactation consultants on a positive birthing experience

Crager

***Jamie Bailey, *Sarah Flynn, *Jessica Hankinson, *Sasha Wilder, NURB 361 Nursing Research, Stephanie Johnson MSN,RN,BC,CNE, Mentor, Department of Nursing, College of Science and Technology**

Numerous research findings and personal testimonies support the belief that breastfeeding your infant is the healthiest and most prophylactic approach to assuring a state of health during such a vulnerable time. Hesitancy and reluctance to breastfeed remain among women despite aggressive media and marketing efforts which promote breastfeeding. Prenatal education reveals the benefits of breastfeeding as well as the technique. However education alone does not guarantee success nor compliance with breastfeeding. Early utilization of Lactation Consultants serves as an excellent resource for new mothers. Measurable outcomes reveal that birthing women who have involved Lactation Consultants throughout the prenatal and birthing process are more likely to initiate breastfeeding and continue breastfeeding; rather than resort to the use of pre-packaged formula.

P. 53. Precursors to a cancer diagnosis: Relevance of elevated Hemoglobin A1C levels

Crager

***Sara Bullock, *Elizabeth Pratt, *Amanda Ratcliffe, *Cathryn Walrath, NURB 361 Nursing Research, Stephanie Johnson MSN,RN,BC,CNE, Mentor, Department of Nursing, College of Science and Technology**

The presence of cancer is an oddity that remains a medical enigma; void of a man-made restraint to bind the impact of this life changing disease. Many theories exist regarding cause and risk factors that preclude the occurrence of cancer. Obesity, unhealthy diet choices and smoking are infamous risk factors for cancer that are included in almost every patient education material created. However, recently a relationship between elevated hemoglobin A1C levels and the occurrence of dysplastic cells has been discovered. While the mechanisms of dysplastic cell development are still not completely understood, advances in medical research reveal that poor compliance of blood glucose levels not only facilitate cardiovascular disease but provoke cancer cell production at an alarmingly rapid rate.

P. 54. Cultural competency in healthcare: Assuring integrity, values and maintaining ethical practice

Crager *Charity Adkins, *Sarah Browning, *Megan Bryant, *Ashley Standafer, NURB 361 Nursing Research, Stephanie Johnson MSN, RN, BC, CNE, Mentor, Department of Nursing, College of Science and Technology

Cultural competency within a healthcare organization demands that providers have the vital knowledge, ample capacity and character to appropriately address the variety of customs, beliefs, social norms and traits of all patient populations. A culturally sensitive healthcare system is one that is accessible to all persons regardless of individual beliefs, attitudes and cultural lifestyles. *Healthy People 2010* identify a goal of eliminating health disparities among culturally diverse groups. Cultural practices and acceptance of those practices influence the choice of healthcare providers. Consequently, one patient can have an undesired experience during healthcare provision which provokes an entire population of persons to avoid seeking services within that particular healthcare organization; compounding the current problem of healthcare disparities among culturally diverse populations.

P. 55. Telehealth in rural settings: Eliminating disparities in access to healthcare resources

Crager *Amber Gabbard, *Janna Pennix, *Morgan Watkins, NURB 361 Nursing Research, Stephanie Johnson MSN, RN, BC, CNE, Mentor, Department of Nursing, College of Science and Technology

Primary healthcare physicians are quickly becoming an extinct population within the rural setting; as opposed to the metropolitan areas which routinely house intensivist and hospitalist programs. The rural settings are challenged and unable to attract the volume of necessary physicians to meet the needs of the service region. Healthcare consumers are forced to migrate to other cities at their own expense. Programs such as the implementation of Telehealth Medicine have been created to combat health disparities. The Telehealth program provides synchronous videoconferencing, electronic transmission of lab data, secure messaging, web-based review of a patient's clinical data and access to web-based educational materials. Fortunately Kentucky has established the Kentucky Telehealth Network (KTHN) with the intent of expanding the Telehealth Network to provide better access to all Kentuckians.

P. 56. People get what they deserve: Interpersonal individual differences in beliefs about a just world

Crager *Sydney P. Howard, Kelly D. Gruber, Dr. Laurie Couch, Mentor, Department of Psychology, College of Science and Technology

Little previous research has focused on just world beliefs in connection with one's interpersonal beliefs or relational success. In the present study a survey of 126 college students was conducted and participants were divided into three groups based on their just world belief scores (i.e., high, moderate, and low). Analyses of survey data suggested that those with low just world beliefs reported greater interpersonal cynicism, relational avoidance, and loneliness than those with high just world beliefs. On the other hand, those with high just world beliefs reported greater trust and empathic concern for others than those with low just world beliefs. No group differences were observed for relational anxiety, and no sex differences were observed. Results will be discussed in terms of their implications for aiding those with relational difficulties.

P. 57. The associations between parental depression, children's play, distress, and caregiving during a separation and reunion procedure

Crager *Paula Sexton, S. Vetter, S. Silger, K. Schoo, Dr. Shari Kidwell, Mentor, Department of Psychology, College of Science and Technology

Children of depressed parents may develop difficulties regulating their emotions and exploring their environment, as well as maladaptive strategies to insure consistent attention. The aim of this study was to examine the interconnections between parental depression and the child's behavior during interactions with their parent. Fifty-five families participated in the study. Child age averaged 4.5 years. Parental depression was assessed using the Center for Epidemiologic Studies Depression Scale (Radloff, 1979). Children's behavior was assessed by two raters using the 21-minute Strange Situation observational procedure (Ainsworth, Blehar, & Waters, 1978). Dependency, caregiving, quality of play, and negative affect were coded. Preliminary results suggest that the higher the level of parental depression, the higher the level of dependency, caregiving behaviors, and negative affect, and the lower the quality of the child's play.

P. 58. Parental engagement and scaffolding: Relationships with parental depression and anxiety

Crager *Christa N. Patterson, *Kristina L. Schoo, Lisa A. Bryant, Dr. Shari L. Kidwell, Mentor, Department of Psychology, College of Science and Technology

Depression and anxiety have both been found to impact parental sensitivity, affect, and interactive style. This study's aim was to investigate how parent's symptoms were related to both parental and child behavior during a problem-solving task. Thirty-five families participated when their children averaged 5.5 years old. Children and parents completed two Lego puzzles. Ratings were made of a variety of child and parent behaviors. Depression and anxiety were measured via questionnaires. Both types of symptoms were associated with Lego task ratings, including child affect, parental engagement, type of help given, and task completion. These results are consistent with previous findings suggesting the impact of depression and anxiety on parent-child interactions. This study was made possible through grants from MSU's IRAPP and NSF's KY EPSCoR programs.

P. 59. Interview and questionnaire methods of measuring attachment: Associations with post-betrayal adjustment

Crager *Tracy L. Osborne, Katie Alexander, Amanda Day-Brown, Dr. Shari Kidwell, Mentor, Department of Psychology, College of Science and Technology

Individuals' attachment style has been shown to be important in how people react and cope. Our study focused on how attachment relates to reactions after romantic betrayal. An additional focus was variation in findings depending on the method through which attachment was assessed. Participants included 43 female college students with negative romantic experiences. Attachment was measured via structured interview and questionnaire. Reactions to betrayal were assessed with behavioral ratings, as well as questionnaires. Although subject's attachment style was associated with their post-betrayal adjustment, results varied according to whether questionnaire or interview attachment methods were used. These findings suggest defensive processing is occurring for some insecure subjects, consistent with the attachment literature. This project was funded by grants from MSU's IRAPP and NSF's KY EPSCoR programs.

P. 60. Insecure representations of attachment and children's internalizing and externalizing symptoms

Crager **Shemeka Anderson, *Tracy Osborne, Dr. Shari Kidwell, Mentor, Department of Psychology, College of Science and Technology*

Attachment to parents has been shown to be an important predictor of children's adjustment. The aim of the current study was to explore the connections between children's representations of their attachments and their emotional and behavioral adjustment. Thirty-five children and their parents participated in the study when the children were six. Children's attachment was measured through child responses to story stems about attachment-related situations. Parent questionnaire and puppets were used to determine children's internalizing and externalizing symptoms. Analyses support the hypothesis, in that children's attachment was correlated with self-report and parent-report of symptoms. Findings are consistent with the literature on the impact attachment has on children's well-being. This project was funded by grants from MSU's IRAPP and NSF's KY EPSCoR programs.

P. 61. Reminiscing about past behavior: Parental sensitivity as a predictor of children's internalizing and externalizing problems

Crager **Hanna E. Gash, Rachel Messer, Shana Silger, Dr. Shari Kidwell, Mentor, Department of Psychology, College of Science and Technology*

The present study included thirty-five children and their primary caregivers. It sought to examine whether parenting could predict the child's internalizing and externalizing behaviors, as measured by the Child Behavior Checklist. A reminiscing task measured aspects of parental sensitivity. The task involved the parent conversing with the child about a past instance of misbehavior and about an instance of good behavior. Ratings were developed for parental verbal and physical warmth. Termination of task refers to whether a solid resolution of the conversation was achieved. On-task conversation was also measured. Results show that these parenting behaviors during the task were associated with child internalizing and externalizing behaviors. This study was made possible through IRAPP, NSF's KY EPSCOR grant, and an undergraduate fellowship.

P. 62. How to deal: Coping styles of the lonely vs. the non-lonely

Crager **T. Zachary H. Goble, Tiffany M. Lange, Dr. Laurie Couch, Mentor, Department of Psychology, College of Science and Technology*

Previous research has outlined both positive and negative strategies for coping with loneliness; however no research has addressed whether the generally lonely vs. generally non-lonely may cope with such feelings in different ways. It was hypothesized that when experiencing feelings of loneliness, those who claim to be a lonely people would report using more negative coping strategies than those who claim to be non-lonely. Correlational analyses and analyses of variance were conducted on survey data from 129 college student volunteers. Results using both methods indicated that self-reported lonely individuals tended to use negative strategies to cope with their feelings of loneliness (e.g., behavioral disengagement); whereas non-lonely individuals tended to use more positive strategies to deal with their loneliness (e.g., positive reinterpretation and growth, use of instrumental support, active coping, turning to religion, seeking emotional support, and planning). Results will be discussed in terms of their therapeutic implications.

P. 63. An assessment of attachment-related differences in interpersonal problems

Crager **Tiffany M. Lange, T. Zachary H. Goble, Dr. Laurie Couch, Mentor, Department of Psychology, College of Science and Technology*

As part of a larger study, a survey assessing demographics, adult attachment, and interpersonal problems was administered to 126 college student volunteers (55 men and 71 women). To evaluate attachment-related differences in interpersonal problems, a MANOVA with post hoc tests was conducted with attachment styles as the independent variable, and measures of six interpersonal problems (e.g., problems with assertiveness, sociability, submissiveness, intimacy, responsibility, and control) as the dependent variables. Overall, the results revealed that those with the fearful style reported greater interpersonal problems than those with the secure style. On the other hand, securely attached participants reported fewer interpersonal problems than other groups. Results will be discussed in terms of their applications to counseling those with relational difficulties.

P. 64. The impact of malingering on the adult AD/HD self-report scale-v.1.1

Crager **Katherin Austin, Medina Jackson, Amy Kiser, Dr. Sean P. Reilley, Mentor, Department of Psychology, College of Science and Technology*

AD/HD is a frequently diagnosed disorder characterized by hyperactivity and/or inattention. Behavioral rating scales like the Adult AD/HD Self-Report Scale-v.1.1 are used as an assessment tool to screen and diagnose individuals with AD/HD. There is a large amount of information on AD/HD available online. The impact of using online AD/HD information for malingering purposes on ASRS v.1.1 is unknown. Because similar rating scales to the ASRS-v.1.1 have been shown to be affected by malingering, the ASRS-v.1.1 is expected to be affected by malingering. Using an experimental approach, the current study found that studying AD/HD diagnostic symptoms led to clinically elevated ASRS-v.1.1 scores relative to students who studied non-AD/HD mental health information. The findings are discussed for adult AD/HD assessment using ASRS-v.1.1.

P. 65. Replication of the impact of AD/HD diagnostic information on malingering of AD/HD symptoms

Crager **Hank Scott, Rachel Cooley, Dr. Sean P. Reilley, Mentor, Department of Psychology, College of Science and Technology*

AD/HD is a commonly diagnosed mental health disorder. Rating scales like the Barkley & Murphy Childhood and Current Symptoms Scales are used to screen and diagnose AD/HD. In a prior study, this inventory was shown to be impacted by malingering. The current study (n=120) extended prior findings by including pre-post assessment of AD/HD and social phobia knowledge and symptoms, manipulation of AD/HD knowledge, and instructions to report honestly or malingering AD/HD symptoms. As predicted, AD/HD symptoms on the scales were substantially exaggerated whereas social phobia was not affected. The control group in which non-AD/HD information was provided was also able to malingering, however, their strategy was more naïve and malingered symptoms of both social phobia and AD/HD. Results are discussed for adult AD/HD assessment.

P. 66. Simultaneous learning of two sequences from the same perceptual domain: Evidence for a blocking effect

Crager **Jamie L. Baird, Dr. Gilbert Remillard, Mentor, Department of Psychology, College of Science and Technology*

Prior research has established that two sequences can be learned simultaneously when the sequences differ perceptually. The present study examined whether or not two sequences from the same perceptual domain could be learned simultaneously. The serial reaction time task was used to assess sequence learning. Subjects were exposed to one sequence in odd blocks of trials and to a second sequence in even blocks of trials. There was robust learning of the sequence presented in odd blocks and weak learning of the sequence presented in even blocks. The results suggest that two sequences from the same perceptual domain cannot be learned simultaneously and that learning of one sequence appears to block learning of a second sequence. This research was supported by a Morehead State University Undergraduate Research Fellowship awarded to Jamie Baird.

P. 67. Biphasic modulation of behavior following excitation of amygdala in rats

Crager **Cory Ruffing, Dr. Ilsun M. White, Mentor, Department of Psychology, College of Science and Technology*

The amygdala is thought to modulate behavioral activation, likely via the nucleus accumbens. Previous studies indicated that inactivation of the amygdala potentiates amphetamine-induced behavioral activation. We examined behavioral changes following activation of the amygdala in conjunction with amphetamine administration. In addition, the lesion effects on behavior were examined. Rats were either implanted with bilateral cannulae for subsequent infusion of NMDA (stimulation) or received excitotoxic lesions to the amygdala. Following recovery, rats were tested in the openfield. Compared to controls, rats that received amphetamine after amygdala stimulation showed a biphasic pattern, with an initial behavioral excitation, followed by a decrease, whereas rats with lesions showed no difference. Thus, under normal conditions, the amygdala's input to the nucleus accumbens may be indirect and likely inhibitory in nature. Supported by NIH grant (MH067606).

P. 68. Development of FlatSat version of the KySat-1 orbital satellite for software testing and subsystems development

Crager **Brandon L. Molton, *Kathleen M. Brown, Dr. Benjamin Malphrus, Mike Combs, and Jeff Kruth, Mentors, Space Science Center, College of Science and Technology*

The Kentucky Satellite consortium is a group between partners throughout Kentucky focused on small satellite development and access to space for small payloads. A standard set by the KySat consortium is KySat-1 Orbital, which uses commercial CubeSat technology. CubeSats are small-scale satellites (10 cm x 10 cm x 10 cm) which have become more accessible for use in space projects on a world wide scale. The purpose of this project is the development of FlatSat, a new model of KySat-1 Orbital. Originally developed by NASA as a form for development and testing of satellite components, FlatSat will be a development allowing us to test and tweak components that go into future KySat orbiting satellites that will be based on the KySat-1 bus.

P. 69. A search for radio emission from blazars detected in outburst by the Fermi Gamma-Ray Observatory

Crager **Nathan Fite, Caleb Grimes, Tyler Burba, Dr. Thomas G. Pannuti, Mentor, Space Science Center, College of Science and Technology*

We present an observing campaign using the Morehead State University 21-meter Radio, Space Tracking Antenna (STA) to detect radio afterglows from blazars detected in outburst by the Fermi Gamma-Ray Observatory. Blazars are highly variable, supermassive black holes embedded in the core of spiral and elliptical galaxies; this pronounced variability is the motivation of this study. The current model for blazars suggests that an abundance of baryonic matter must be readily available in proximity to the black hole, as this material falls into the core extremely variable emission is produced. The design of this study is meant to establish further collaboration between Morehead State University and the international community of astronomers who study blazars. This study was made possible from the KSGC Undergraduate Research Fellowship.

P. 70. Chandra observations of the nearby spiral galaxy NGC 3184

Crager **Thomas Wells, Dr. Thomas G. Pannuti, Mentor, Space Science Center, College of Science and Technology*

We present an analysis of two archival observations made with the Chandra X-ray Observatory of the nearby spiral galaxy NGC 3184. These observations were analyzed as part of a study of supernova remnants in nearby galaxies. Using the wavelet detection algorithm "wavdetect" we have detected a total of 55 X-ray sources, of which 33 were detected in both observations. We have developed programs in the Python programming language that automate the calculations of count rates, flux densities and luminosities (both absorbed and unabsorbed) of all detected sources. We also have searched for X-ray counterparts to the four known historical supernovae in this galaxy. This research has been supported by a grant from the Kentucky Space Grants Consortium.

P. 71. A general breakdown of payload creation for the Kentucky Space Near Space balloon missions

Crager **Jessamyn G. Delgado, David Jones (UK Co-author), Dr. Benjamin Malphrus, Mentor, Space Science Center, College of Science and Technology*

Kentucky Space employs students from across the state of Kentucky for various areas in Space Science research. One aspect is the Near Space missions. These are designed and developed by the students on the team. Within a given set of parameters, the Near Space payload container is created and then launched on a high altitude weather balloon that reaches the edge of space 100,000 feet into the stratosphere. With little time and planning, the Kentucky Space student team designed and built a reusable airframe model that presents a much needed platform for research and development of space science concepts and structures. This project describes the design considerations and resulting payload carrier required to enable and protect KySpace payloads in the harsh environment of the upper troposphere. This project is funded by a MSU Undergraduate Research Fellowship and a NASA EPSCoR grant through Morehead State University's Space Science Center.

P. 72. A Chandra x-ray observation of the supernova remnant G352.7-0.1

Crager **Tiffany Murray, Dr. Thomas Pannuti, Mentor, Space Science Center, College of Science and Technology*

We present a spatial and spectral X-ray analysis of the Galactic supernova remnant (SNR) G352.7-0.1 using archival data from an observation made with the *Chandra* X-ray Observatory. The effective exposure time of this observation was 44583 seconds. G352.7-0.1 has a compact angular extent (8 x 6 arcminutes in size) and fits on one ACIS chip. Our analysis reveals the presence of stellar ejecta as indicated by enhanced abundances of sulfur and silicon: this result establishes G352.7-0.1 as one of the few Galactic SNRs with X-ray spectra dominated by stellar ejecta. We find no X-ray counterpart to the luminous compact source revealed by radio observations. We also compare G352.7-0.1 with other X-ray luminous Galactic and extra-galactic SNRs.

P. 73. Time variability of emission from radio luminous blazars

Crager **Caleb Grimes, Nathan Fite, Tyler Burba, Dr. Thomas Pannuti, Mentor, Space Science Center, College of Science and Technology*

Blazars are galaxies which have a central supermassive blackhole that ejects jets of concentrated photons toward the Earth as a result of the galaxy's orientation. Blazars experience variations of emission over a wide range of the electromagnetic spectrum, most notably at higher frequencies such as X-ray and gamma-ray. Utilizing the Morehead State University 21-meter Space Tracking Antenna, observations were made from 2007 to 2009 of three known radio luminous blazars -- BL Lac, 3C454.3 and CTA102 -- to uncover time variability in their observed emission. By analyzing the variability of blazars we will be able to determine whether the models for the respective blazars account for these emission variations. Support for this project comes from a grant from the Kentucky Space Grant Consortium.

P. 74. A catalog of extragalactic radio supernova remnants: Luminosity, minimum energies and magnetic fields

Crager **Tyler T. Burba, Dr. Thomas G. Pannuti, Mentor, Space Science Center, College of Science and Technology*

We have compiled a catalog of candidate radio supernova remnants (SNRs) from a sample of nearby galaxies. Extragalactic SNRs were chosen to avoid known obstacles in studies of Galactic SNRs. We have calculated basic properties of sources, including luminosity L for the frequency range 10^7 - 10^{11} Hz, the minimum energy E_{\min} required to power each source through synchrotron emission, and the corresponding magnetic field strength, B_{\min} . The goals of this work include calculating the typical percentage of the canonical mechanical energy budget of an SNR ($\sim 10^{51}$ ergs) that is devoted to the acceleration of cosmic ray particles, as well as the amount of amplification of the ambient magnetic field. We also compare properties of SNRs in starburst galaxies with properties of SNRs in normal galaxies.

2008-2009

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 2008-2009 awardees and their mentors.

COLLEGE OF BUSINESS

Student URF	Class	Department	Mentor (s)
Amir Ahmadi	Fr.	AEF	Thomas Creahan
Erica Belmont	Jr.	AEF	Janet Ratliff
Nicholas Kyle Christy	Sr.	AEF	Ali Ahmadi
Steven Fife	Sr.	MMRE	Brian Whitaker
John Dustin High	Sr.	MMRE	Michelle Kunz
Brandon Leishman	Fr.	MMRE	Lindsey Godwin
Nathan Mills	Jr.	MMRE	Fatma Mohamed

COLLEGE OF EDUCATION

Student URF	Class	Department	Mentor (s)
Heather Flynn	Jr.	CUR/INST	Lesia Lennex
Brittany Carol Herrera	So.	CUR/INST	Kim Nettleton
Christopher Conklin	Sr.	HPES	Gina Blunt/ Jennifer Dearden
Sara Fitzpatrick	Sr.	HPES	Gina Blunt/ Monica Magner
Daniel Lorenz	Sr.	HPES	Julia Hypes/ Michael Hypes
Amy Sexton	Sr.	HPES	Gina Blunt/ Monica Magner
Stephanie Teater	So.	HPES	Steve Chen

CAUDILL COLLEGE OF HUMANITIES

Student URF	Class	Department	Mentor (s)
Shane Hall	So.	ART	Bobby Campbell
Laura Haywood	Sr.	ART	Jennifer Reis
Kendrick Holbrook	Sr.	ART	Joy Gritton
Cecily Howell	Fr.	ART	Jennifer Reis
Whitney Sibcy	Sr.	ART	Emma Perkins
Karri Smith	Jr.	ART	Bobby Campbell
Gary Cornett	So.	COMM/THEA	Deborah Plum
David Gillum	Fr.	COMM/THEA	Michael Moore
Matthew Hatfield	Sr.	COMM/THEA	Ritta Abell
Kristin Hausstein	Jr.	COMM/THEA	Robert Frank
Amanda Romito	Sr.	COMM/THEA	Janet Rice McCoy
Misty Skaggs	Sr.	COMM/THEA	Ann Andaloro
Nyshia Taylor	So.	COMM/THEA	Ritta Abell
Savannah Varble	Jr.	COMM/THEA	Tim Creekmore
Ryan Anderson	Sr.	EFLP	Crystal Wilkinson
Lauren Decker	Jr.	EFLP	John Secor
Theresa Lang	Jr.	EFLP	Kathryn Mincey
Rachel Messer	Sr.	EFLP	Karen Taylor
Alex Schulz	Sr.	EFLP	Chris Holbrook

Eric Boos	Sr.	GGH	Ric Caric
Amelia Conway	Jr.	GGH	William Green
Erik Hale	Sr.	GGH	Adrian Mandzy
Eric Patton	Sr.	GGH	Jason Holcomb
Christopher Wiseman	Jr.	GGH	Kris DuRocher
Timothy Bailey	Sr.	MUS	Lori Baruth
Nicholas Charles Breiner	Jr.	MUS	Jeanie Lee
Kevin Michael Callihan, Jr.	So.	MUS	Stacy Baker
Justin Croushore	So.	MUS	Jeanie Lee
Mallory Draughn	Sr.	MUS	June Grice
Molly Maynard	Sr.	MUS	Greg Detweiler
Sara Sipes	Jr.	MUS	Nathan Nabb
Joey Thieman	Sr.	MUS	Paul Taylor
Michelle Fiore	Sr.	SSWC	Bernadette Barton
Ansley Lambert	Sr.	SSWC	Eric Swank

INSTITUTE FOR REGIONAL ANALYSIS AND PUBLIC POLICY

Student URF	Class	Department	Mentor (s)
Ashley Adkins	So.	IRAPP	Paul Steele
Susan Brown	Sr.	IRAPP	Brian Reeder
Laura Hall Reed	Sr.	IRAPP	Paul Steele

COLLEGE OF SCIENCE AND TECHNOLOGY

Student URF	Class	Department	Mentor (s)
Kevin Dillon	Sr.	AGR/HS	J. Mike Phillips
Latissa O’Cull	Jr.	AGR/HS	Phil Prater
Rudi Pitzer	Sr.	AGR/HS	Tammy Platt/ Troy Wistuba
Jessica Robinette	Sr.	AGR/HS	Rebecca Miculinich/ Troy Wistuba
Shannon Touroo	Sr.	AGR/HS	Phil Prater
Amberlee Byrd	Sr.	BIOL	Stephanie Welter
Tyler Elam	Sr.	BIOL	Janelle Hare
Courtney Forbis	Sr.	BIOL	Darrin DeMoss
Jeremy Gayheart	So.	BIOL	Doug Dennis
Alan Grubb	Jr.	BIOL	Allen Risk
William Hankinson	Jr.	BIOL	Michael Fultz
Gregory Caleb Howard	Sr.	BIOL	Darrin DeMoss
Ashley Loan	Jr.	BIOL	Craig Tuerk
Kendra McQuerry	Sr.	BIOL	Craig Tuerk
Megan Minch	Jr.	BIOL	David Peyton
Kristen Mitchell	Jr.	BIOL	Geoffrey Gearner
Logan Murphy	Jr.	BIOL	David Saxon
Amy Potter	Sr.	BIOL	Geoffrey Gearner
James Richardson	Sr.	BIOL	Allen Risk
Savannah Slone	Sr.	BIOL	Darrin DeMoss
Andrew Stacy	Jr.	BIOL	Sean O’Keefe
Tiffany Stacy	Fr.	BIOL	Doug Dennis
Rashika Agrawal	Jr.	IET	Yuqiu You
Evan Boyd	Fr.	MATH/CS	Christopher Schroeder
Michael Blankenship	So.	MATH/CS	Biswajit Panja
Joshua Bradley	Fr.	MATH/CS	Sherif Rashad
Andrew Crowe	Sr.	MATH/CS	Biswajit Panja

Christopher Estes	Fr.	MATH/CS	Sherif Rashad
Russell Fugate	So.	MATH/CS	Biswajit Panja
James Gibbs	Jr.	MATH/CS	Duane Skaggs
Jonathan Harris	So.	MATH/CS	Biswajit Panja
Dionna Hall	Jr.	MATH/CS	Michael Dobranski
Amber Harrison	Fr.	MATH/CS	Gerd Fricke/ Duane Skaggs
Julie Lang	Fr.	MATH/CS	Dora Ahmadi
Lauren May	Fr.	MATH/CS	R. Doug Chatham
Brian Salyer	Jr.	MATH/CS	Robin Blankenship
Bradley Schneider	Fr.	MATH/CS	Biswajit Panja
Jeremy Gayhart	So.	NUR	Stephanie Johnson
Megan Huellemeier	Sr.	NUR	Donna Corley
Jamie Baird	Sr.	PSY	Gilbert Remillard
Hanna Gash	Sr.	PSY	Shari Kidwell
T. Zach Goble	Jr.	PSY	Laurie Couch
Kelley Gruber	So.	PSY	Sean Reilley
Tracy Osborne	Sr.	PSY	Shari Kidwell
Cory Ruffing	Jr.	PSY	Ilsun White
Matthew Wampler	Jr.	PSY	Laurie Couch
Cassie Watkins	Sr.	PSY	Sean Reilley
Jim Cody Brown	Sr.	SSC	Ben Malphrus
Daniel C. Graves	Fr.	SSC	Thomas Pannuti
Brandon Molton	So.	SSC	Ben Malphrus
Anthony Shelley	Sr.	SSC	Ben Malphrus

Celebration of Student Scholarship Sponsored by:

**Office of the President
Office of the Provost
Office of Research and Sponsored Programs
Student Government Association**

Members of the Celebration of Student Scholarship Committee

**Ali Ahmadi
Gina Blunt
Laurie Couch
Robert Franzini
Timothy Hare
Michael Harman
Philip Krummrich
Bruce Mattingly, Chair
Scott McBride
April Miller
Janet Ratliff
Allen Risk
Paul Steele**



MSU is an affirmative action, equal opportunity, educational institution