



MURRAY

STATE UNIVERSITY

SCHOLARS WEEK

Program Booklet

April 15-19, 2013

Updated: 4/10/13

12th Annual
Scholars Week
Program and Abstracts

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Welcome to *Scholars Week* 2013. This year marks the twelfth anniversary of Murray State University's (MSU) *Scholars Week* celebration!

The 2012-13 academic year has been productive for Murray State students and faculty.

As I reflect over the year and accomplishments of our undergraduate students taking part in research, scholarly, and creative endeavors I am continually impressed. Throughout the year, a number of faculty-mentored projects have received financial support through the Office of Undergraduate Research and Scholarly Activity's Mini-Grant Program. Four Research Scholar Fellowships were awarded to undergraduate students who participated in a very competitive review process. MSU again coordinated the *Posters-at-the-Capitol* program in Frankfort leading this statewide program on behalf of all the public institutions across the Commonwealth.

This year we continued to see undergraduate students taking part in faculty-mentored learning experiences – coined “high-impact” practices by the Association of American College and Universities – be accepted to state, regional and national conferences. Presentations were not the only outcome; publication of undergraduate student work continued in discipline-specific and multidisciplinary professional journals. Outcomes such as these raise the visibility of our students and open doors to quality graduate programs and career opportunities.

As the academic year culminates, the University is looking forward to the annual *Scholars Week* celebration which recognizes the creative and scholarly work of hundreds of Murray State undergraduate and graduate students. I encourage you to attend as many of this year's *Scholars Week* poster sessions, oral presentation sessions, performances and exhibits as possible. I am grateful to you – our students, faculty, and staff – for making this another outstanding year for scholarly accomplishments at Murray State University.

Randy J. Dunn
President



Welcome to the 12th anniversary of *Scholars Week* at Murray State University. This university-wide celebration of undergraduate and graduate student research, scholarship, and creative activity is something I look forward to each spring semester.

Research shows us that students engaging in faculty-mentored experiences learn better and have a stronger sense of engagement than those without such opportunities. Murray State University has long supported the types of projects on display at *Scholars Week* through our honors, service learning, study abroad, and undergraduate and graduate research programs.

I applaud the efforts of our faculty and staff for continuing to give so generously to our students. I am continually amazed at what they can do when challenged and given necessary support. Whether it is through oral presentations, posters sessions, exhibits, or performances, the results are clear – the students presenting during this celebration are active learners and headed for a bright future.

Please take advantage of all the activities during *Scholars Week* and enjoy!

Bonnie Higginson
Provost and Vice President for Academic Affairs





There are no guarantees in life; we all have heard that. It's difficult to guarantee anything, especially a college / university's performance with regard to student learning, but there are some parameters: In the world of accountability in which we all live, critical components of student learning are obvious in courses completed, grades achieved, and ultimately graduation; however, another equally critical component of student learning is in research and scholarship during the undergraduate years. "Traditionally, undergraduate education has taken place in the classroom, while research has been for graduate students and faculty. No more. College and universities are pushing hard to get many more undergraduates involved in research" (Justin Pope, Associated Press, USA Today, Feb. 5, 2007). I am very proud, as a Murray State University faculty member and administrator to share with you

that your education here, with tremendous faculty/staff interaction, has been exponentially "ramped up" with regard to undergraduate research under the leadership of the Office of Undergraduate Research and Scholarly Activity. You should be proud of your engagement in scholarship and research during our annual *Scholar's Week*, working hand-in-hand with professors across all of our colleges, departments, and disciplines. I am very proud to welcome you to this cutting edge event where Murray State University is an equal peer to some of the best research universities in the nation.

There are no guarantees in life, and student learning is difficult to measure; however, your participation in Murray State University's *Scholar's Week* is evidence of your success here as a student as well as your success in the not-too-distant-future as a graduate. Don't forget your beginnings, and always remember your alma matre, Murray State University.

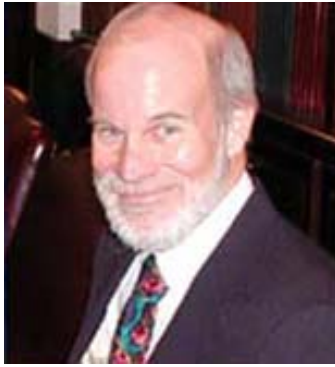
Tim Todd
Dean, Arthur J. Bauernfeind College of Business

Welcome message from Dean David Whaley of the College of Education to be inserted.



On behalf of the College of Health Sciences and Human Services, welcome to *Scholars Week*. This event offers the opportunity to interact with emerging professionals representing our College as they exhibit unique contributions to their fields of study. The disciplines housed within this College are linked together by a common foundation of serving others, particularly in the areas of health, safety, and general well-being. As you peruse the various displays, take time to interact with the scholars, ask questions and discuss the work being presented here. Remember, it is your world to explore!

Susan Muller
Dean, College of Health Sciences and Human Services



Murray State University's *Scholars Week* provides an exciting opportunity to recognize and celebrate the academic achievements of our undergraduate and graduate students, showcasing the results of their scholarly and creative projects. Research, fundamental and applied, is an essential component of our curricula. Throughout history, major discoveries and new knowledge have been essential to human progress. Through active research agendas and creative endeavors, our faculty and students explore the boundaries of their disciplines and expand our realm of possibilities. Discovery through research and creative activity encourages a sense of relevance and excitement as new knowledge is applied to society, industry, and beyond. The faculty in the College of Humanities and Fine Arts work together with their students on research and creative projects in classrooms, clinics, and studios, becoming partners in the exploration of disciplines and the acquisition of new knowledge. This partnership expands the abilities of our students to think independently, creatively, and critically. As one of the leading universities in the region, this is our ultimate mission.

Ted Brown
Dean, College of Humanities and Fine Arts



MSU's *Scholars Week* is a time for us to celebrate the research, scholarship, and creative accomplishments of our students. During this week, we have the opportunity to recognize and affirm those students who have demonstrated their commitment to their disciplines by pursuing learning beyond the confines of the classroom. In addition, we honor those faculty who have invested their time, talents, and resources to involve students in a richer learning experience. The posters and exhibits presented this week are evidence of MSU's dedication to creating a student-centered learning environment where students are encouraged to pursue excellence in their creative and academic achievement. The College of Science, Engineering, and Technology is happy

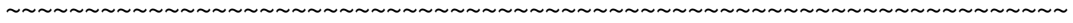
to support *Scholars Week*, and congratulates all who participate.

Steve Cobb
Dean, College of Science, Engineering, and Technology



On behalf of the Hutson School of Agriculture, I would like to welcome you to this unique opportunity to celebrate research, scholarly, and creative activity. It is also a time to showcase our dedicated faculty who are devoted to the personal and professional growth of our students. The collegiate experience is a journey with many avenues rather than simply a destination. As you participate in this event, you will view the numerous ways the University is committed to academic excellence as well as providing the opportunity to explore these avenues. Through activities like *Scholars Week*, Murray State University and the Murray State University Hutson School of Agriculture offers its students the opportunity to get an education instead of just a degree. I would like to commend all the participants in this event.

Tony Brannon
Dean, Hutson School of Agriculture



While the accomplishments of our students is a constant point of pride to Murray State University, *Scholars Week* stands out as it gives us an opportunity to highlight the amazing research and creative activity performed by some of our best and brightest students. Much like the faculty who work with these students firsthand, those of us here in the University Libraries have the good fortune to participate in the learning and growth that accompanies these student endeavors. The excellent displays you will see during *Scholars Week* are the visible result of that learning, and help demonstrate the value Murray State University places on teaching, research and service excellence.

On behalf of the faculty and staff of the University Libraries, welcome!

Adam Murray
Dean, University Libraries

Murray State University has established a tradition of undergraduate scholarship culminating annually in ***Scholars Week***. It is an opportunity to share student's accomplishments with the entire University community. Being able to showcase the critical thinking and creative skills that our students possess demonstrates their ability to think "outside the box", to creatively solve problems and to add to the body of nursing knowledge. We are proud of our students, their talents, their work ethic and their accomplishments. We believe that you will share our pride. Welcome to ***Scholars Week!***

Marcia Hobbs
Dean, School of Nursing



A Welcome from the Undergraduate Research and Scholarly Activity Advisory Board and Staff

On behalf of the Undergraduate Research and Scholarly Activity Advisory Board and staff, welcome to our twelfth annual *Scholars Week* celebration. We are pleased that over the past ten years that several thousand Murray State University undergraduates and graduate students have had the opportunity to present their research, scholarly, and creative works to the university community.

The work displayed in this year's *Scholars Week* abstract booklet represents thousands of hours of effort on behalf of Murray State's students and faculty. To our students, you are to be commended for your dedication and effort! Your efforts will be rewarded when you apply to graduate school or when you look for that first job. To the faculty, you are helping our students succeed and this is among our greatest rewards.

Please join the URSA Advisory Board and staff in celebrating the accomplishments of our students by attending as many of the *Scholars Week* events as possible. Our young scholars need your continued support!

Advisory Board and Staff:

Dr. Terry Derting
Biological Science

Dr. Daniel Hepworth
SWK, CRJ, & GER

Dr. Zbynek Smetana
Art

Dr. Meagan Musselman
Education

Dr. Joyce Shatzer
Education

Dr. David Pizzo
History

Dr. Terry Holmes
Business Administration

Dr. David Ferguson
Agriculture

Ms. Summer Cross
Nursing

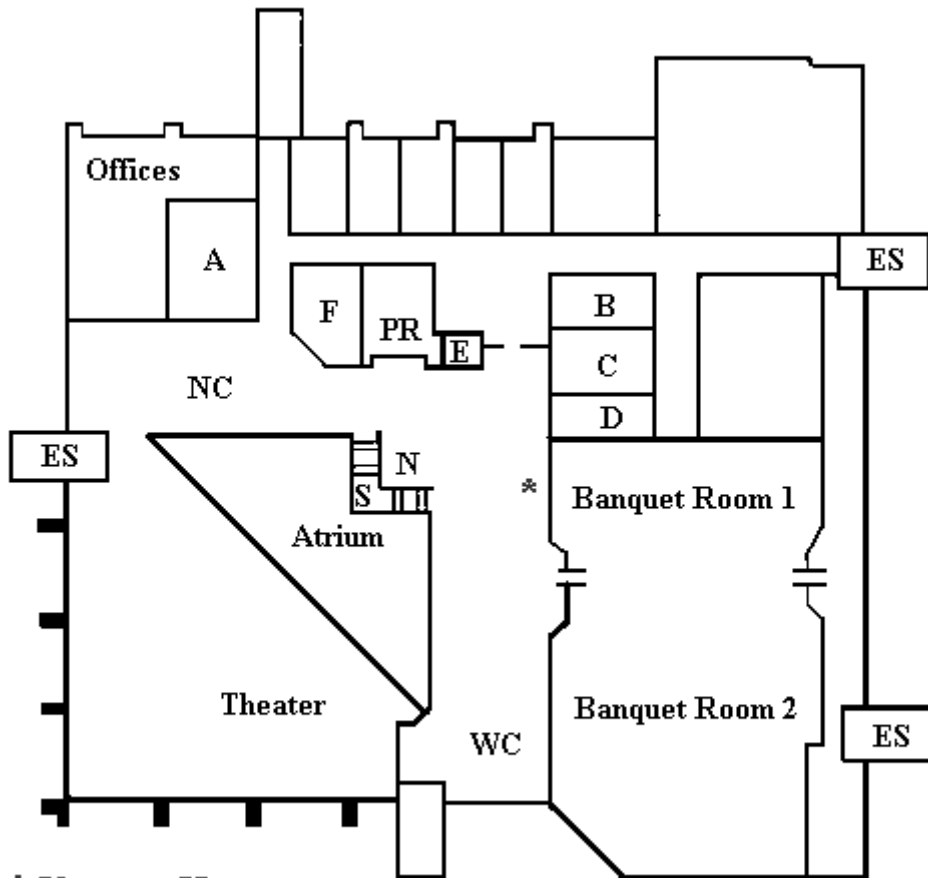
Dr. Pat Williams
Agriculture

Dr. Wafaa Fawzy
Chemistry

Mr. Dieter Ullrich
Library

Dr. David Eaton
Economics/URSA

Mr. Jody Cofer
URSA



*** You are Here**

- | | |
|-----------------------------|------------------------------|
| A – Barkley Room | E – Elevator |
| B – Ohio Room | F – Tennessee Room |
| C – Mississippi Room | N – Crow’s Nest |
| D – Cumberland Room | PR – Public Restrooms |
| S – Center Stairs | ES – Emergency Stairs |
| NC – North Concourse | WC – West Concourse |

Scholars Week Schedule

Monday, April 15, 2013

Poster Session

Sigma Xi Poster Competition

Large Ballroom, Curris Center

Session Chair: Dr. John Mateja

9:00 a.m. – 12:00 p.m. Poster Set-Up

12:00 p.m. – 4:00 p.m. Poster Judging

* *Undergraduate*

** *Graduate*

Kaylin Boeckman** – Watershed Studies

Estimating Trophic Position of Ambystoma tigrinum nebulosum larvae in a western Colorado Stream

Hayden Brown* – Environmental Geology

The Effect of Grain Size Distributions of Sediment on the Incision Rates of Bedrock River Channels

Emily Clouse* – Wildlife and Conservation Biology & Kathleen Mount – Biology

Grey Tree Frog Metamorphic Morphology Affects Jumping Performance

Lucas A. Daily* - Chemistry

1H NMR and Thermal Analyses of 1,4-Dialkyl-1,2,4-triazolium Ionic Liquids

Alexander Earhart* – Biomedical Sciences

Effects of Atrazine on Neurodevelopment and Degeneration in Drosophila melanogaster

Morgan Geile* – Conservation Biology

Spreading the Disease: Using Tiger Salamanders as Sentinels of Chytrid Fungus for Boreal Toad Restoration

Michael Chaise Gilbert* – Aquatic Biology

Remote Sensing Analysis of the Seasonal Variation of Chlorophyll-a concentration in Kentucky Lake using Landsat images to determine gradients in habitat quality Bighead and Silver C

Tosha Gilpin* – Environmental Geology

Mapping of Environmental Change Caused by Eruption, Piton de la Fournaise, Réunion

Kaleigh Gray* - Psychology

Profanity: Why is it so D@#% Important?

Malcolm Jackson* - Psychology

It Can Wait: Outcomes and Predictors of 'Waiting' and Sexual Compromise

Jennifer Martin** - Geoscience

Change Detection Techniques for Long-term Monitoring of the Surface Mining Region of Eastern Kentucky

Jason Merrick* - Geoscience

Change Detection of Florida Mangroves at the Northern Limit of Their Habitat

Jared Militello** - Biology

*Spatiotemporal Movement and Habitat Use of Re-introduced Juvenile Alligator Gar, *Atractosteus spatula*, in Clarks River, Kentucky*

Md. Niaz Morshed** - Geoscience

Modeling of the Effect of Sea Level Rise in the Coastal Region of Bangladesh

Riley Nance* – Elementary Education

Environmental Influences on Children's School Behavior

Ross Paschall* – Engineering Graphics & Design, Emily Shipley – Engineering Graphics & Design, & Spencer Gooch – Engineering Graphics & Design

Indoor Energy Harvesting System

Sam Pellock* – Chemistry/Biochemistry & Andrew Thompson - Mathematics

Testing Darwin's Naturalization Hypothesis Using Generalized Linear Models

Zachary K. Reeder* - Chemistry

Synthesis and Thermal Stability of Imidazolium-Containing Polyurethanes

Carlynn Rekosh* – Wildlife Biology

*Absence of *S. neurona* in Virginia opossums (*Didelphis virginiana*) in Calloway County*

Sijin Ren* - Chemistry

Intermolecular Interactions Between Each of Uracil and Adenine with Reactive Oxygen Species

Bradley Richardson* - Fisheries/Aquatic Biology

A Search for Species Identifiers Between Alligator Gar, Longnose Gar, Shortnose Gar, and Spotted Gar Using Morphological Metrics

Hannah Robbins* - Agronomy

Soil Organic Matter and Aggregation in Relation to Agricultural Systems

James Smith** - Geoscience

Monitoring Sex Offender Compliance in the Pennyrile District of Western Kentucky

Demi St John* – Physics and Mathematics
Bright X-ray Point Sources in our Galaxy

Michael Stonewall** - Geosciences
The Application of GIS-based Logistic Regression for Landslide Susceptibility Mapping in the Appalachian Mountains: Harlan County, Kentucky

Elizabeth Tarter* – Biology & Alexander Earhart - Biology
Describing Tropical Termite Nest Growth and Decline Patterns Using Logistic Growth Models

Amanda Thomas* – Biological Sciences & Nhan Huynh – Biological Sciences
Determining the Northern Limit for Red Mulberry (Morus rubra) Using DNA-identified Individuals

Matthew Wallace* – Zoological Conservation
Population Trends of Copes Gray Tree Frogs in Murphy's Pond Kentucky

Carli Whittington* – Biology, Carlynn Rekosh – Biology, & Chesika Crump - Biology
Experimental Analysis of the Relationship Between Parasite Burden and Cognitive Abilities in House Mice (Mus musculus)

Oral Session

Domestic Politics in Its Many Guises Session I

Ohio Room, Curris Center
Session Chair: Dr. Ann Beck
1:00 p.m. – 4:00 p.m.

Jared Choate – Political Science
Legislative Term Limit's in Regard to Madison

Micah Clayton – Political Science
United States Antitrust Policy

Tyler Collins – Political Science
Local Option Alcohol Votes in Kentucky: Effects on Size of Area and Alcohol Type on Outcome

Michael Grissom – Political Science
Presidential Ratings Systems and Their Fallacies

James Hobbs – Political Science
Low Information Elections; How do Voters Make Decisions on Ballot Propositions?

Andrew Leonard – Political Science
The Power of the Celebrity Endorser

Carlton Matthews – Political Science and History
Non-Constituent Influence: Do Certain Interest Groups Have a Dominating Influence in the U.S. Senate Today?

Jason Mott – Political Science
Gun Curriculum in Schools

Thomas Reynolds - Agribusiness
Impact of the 2008 Farm Bill on American Agriculture

Travis Rupprecht - Political Science, International Affairs, and American Government
The Tea Party and the 2010 Midterm Election

Steven Wilson – Political Science
The Effect of Presidential Party on Firearms Sales Since 1980

Tuesday, April 16, 2013

Oral Sessions

Cross Cultural Analysis and Literature Session

Ohio Room, Curris Center
Session Chair: Dr. Staci Stone
3:30 p.m. – 4:30 p.m.

Cassie Benson – Creative Writing
Redemption for the Soul of a Monster in Bram Stoker's Dracula

Bailey Boyd – English Literature and Spanish
Tragedizing the Villain: Dracula as an Aristotelian Tragedy

John Eads – Social Work
Cultural Relativism in Cross-Cultural Social Work Settings

Kari Shemwell – English and Spanish
Audre Lorde: Poetry and Problems of the Feminist Movement

Mathematical Biology Guest Lecturer

Barkley Room, Curris Center
Session Chair: Dr. Maeve McCarthy
3:30 p.m. – 4:30 p.m.

Dr. Louis J. Gross, Professor of Ecology and Evolutionary Biology, University of Tennessee and Director of the National Institute for Mathematical and Biological Synthesis

"Best" in a Biological Context: Optimization across the Biological Hierarchy

Other Sessions

Awards Recognition Reception

Faculty Club

4:30 p.m. – 5:30 p.m.

(Faculty & Staff Only)

Dr. Claire Fuller, Professor of Biological Sciences, 2013 Recipient of the University Distinguished Mentor Award

Dr. Kevin Miller, Assistant Professor of Chemistry, 2013 Recipient of the Alumni Association's Emerging Scholar Award (1)

Dr. Katherine Smith, Assistant Professor of Marketing, 2013 Recipient of the Alumni Association's Emerging Scholars Award (2)

Dr. Glynn Mangold, Professor of Marketing, 2013 Recipient of the Alumni Association's Distinguished Researcher Award

Dr. Alexey Arkov, Associate Professor of Biological Sciences, 2013 Recipient of the Committee on Institutional Supported Research (CISR) Presidential Research Award

Sigma Xi Banquet

Large Ballroom, Curris Center

Contact: Dr. Maeve McCarthy

6:00 p.m. – 8:00 p.m.

(For Sigma Xi Members, Competition Participants, and Invited Guests Only)

Dr. Louis J. Gross, Professor of Ecology and Evolutionary Biology, University of Tennessee and Director of the National Institute for Mathematical and Biological Synthesis

Educational Approaches to Encourage "Fearless" Scientists: Some lessons from 30 years of initiatives at the math/biology interface.

Wednesday, April 17, 2013

Poster Session

General Poster Session

Large Ballroom, Curris Center

10:00 a.m. – 11:30 a.m.

Students will be with their posters from 10:30 a.m. to 11:30 a.m.

*** Sigma Xi Poster Competition Participant*

**** Service Learning Poster*

Gabriel Adams – Engineering Graphics and Design & Casey Butterworth – Engineering Graphics and Design

Energy Collection in Public Spaces

Amal Aljaddani – Geoscience, Christian Brown – Wildlife Biology, Michael Burzynski – Wildlife Biology, Clinton Cunningham – Wildlife Biology, Kyle Cunningham – Geoscience, Olivia DaRugna – Wildlife Biology, Justin Doss – Wildlife/Conservation Biology, Emily Dowell – Wildlife Biology, Brent Eugley – Wildlife Biology, Sarah Flarsheim – Conservation Biology, Morgan Geile – Conservation Biology, Mark Julian – Geosciences/Environmental Biology, Emily Knoth – Geoscience/Earth Science, Jessica Marshall – Geoscience, James McCallon – Geoscience, Madeleine Pratt – Wildlife/Conservation Biology, Matthew Prusinski – Wildlife/Conservation Biology, Michael Prymula – Geoscience, Carlynn Rekosh – Wildlife/Conservation Biology, Marcie Siders – Wildlife/Conservation Biology, Lauren Slingerland – Wildlife/Conservation Biology, Daniel Stephens – Wildlife Biology, John Stone – Geoscience, Nathan Truax – Geosciences/Environmental Geology, Katelyn Welch – Wildlife Biology, & Shellie Wilson – Wildlife Biology

*The Bee Creek Walking and Biking Trail Plan for the City of Murray****

Gloria Alverio – Youth and Non-Profit Leadership

*Hygiene for Happiness****

Jinyoung Baek – Food Nutrition

The Acceptability of Green Tea Powder at Different Levels in Cookies

Kullen Balthrop - Psychology

It is Not What You Wear, but How You Wear It

Ashley Baxa – Youth and Non Profit Leadership, Mary Bailey – Undeclared, & Peter Hines - Undeclared

*Doggone Safe****

Kaylin Boeckman** – Watershed Studies

*Estimating Trophic Position of *Ambystoma tigrinum nebulosum* larvae in a western Colorado Stream*

Gregory Bone – Economics and Political Science

Testing for the Political Monetary Cycle in the United Kingdom and Australia

Cheyenne Bourland – Psychology

The Relationships between Appearance Anxiety, Body-Esteem, and Social Boldness

Anthony Boyken - Psychology
The Effects of Fast Music on Memory

Hayden Brown** – Environmental Geology
The Effect of Grain Size Distributions of Sediment on the Incision Rates of Bedrock River Channels

Carolyn Potter Buchholz – Teaching English as a Second Language
The Effect of Teacher Responses on a Student's Willingness to Communicate

Mayra Alejandra Chavez – Nutrition Sciences
Creating a New Source of the Carotenoid, Lycopene

Catie Clark – Agriscience Technology, Chad Bell – Agriscience Technology, & Tamara Phillips - Nursing
*Halloween Health-A-Thon****

Joshua Clifford - Computer Science
Android Controlled UGVs and Their Practicality for Industrial Use

Emily Clouse** – Wildlife and Conservation Biology & Kathleen Mount – Biology
Grey Tree Frog Metamorphic Morphology Affects Jumping Performance

Lucas A. Daily** - Chemistry
¹H NMR and Thermal Analyses of 1,4-Dialkyl-1,2,4-triazolium Ionic Liquids

Elizabeth Davis - Psychology
Perceptions of Academic Dishonesty

Katie Davis – Youth and Non-Profit Leadership, Michelle Baird – Youth and Non-Profit Leadership, & Matthew McNutt – Broadcasting
*Fall Festival at Hickory Woods****

Alexander Earhart** – Biomedical Sciences
Effects of Atrazine on Neurodevelopment and Degeneration in Drosophila melanogaster

Bethany Eschman, Morgan Masterson, & Dylan Stinson – Youth and Non-Profit Leadership
*YNL Ambassadors****

Rachael Evansco - Psychology
Perception of Upbringing and Personality Traits

Meredith Freeland - Dietetics
Effects on Color, Flavor and Moisture When Added Fat in a Store-bought Brownie Mix is Replaced with Applesauce or Black Beans

Morgan Geile** – Conservation Biology

Spreading the Disease: Using Tiger Salamanders as Sentinels of Chytrid Fungus for Boreal Toad Restoration

Michael Chaise Gilbert** – Aquatic Biology

Remote Sensing Analysis of the Seasonal Variation of Chlorophyll-a concentration in Kentucky Lake using Landsat images to determine gradients in habitat quality Bighead and Silver C

Tosha Gilpin** – Environmental Geology

Mapping of Environmental Change Caused by Eruption, Piton de la Fournaise, Réunion

Kaleigh Gray** - Psychology

Profanity: Why is it so D@#% Important?

Lauren Griffith - Dietetics

Acceptability of Blondies when Garbanzo, Great Northern, or Cannellini Beans are Substituted to Produce a Gluten Free Blondie

Sarah Guthrie - Nutrition

The Acceptability of Chia Gel as an Oil Substitute in Cake Formulations

Will Handlin – Youth and Non-Profit Leadership

*Holiday Mail for Heroes****

Malcolm Jackson** - Psychology

It Can Wait: Outcomes and Predictors of 'Waiting' and Sexual Compromise

Erica Jarvis – Criminal Justice

Examining the Historical Progression of the Rights and Treatment of Persons with Disabilities

Derrick Jent – Wildlife Biology

Understanding what types of fungi are being distributed by P. phalangioides

Lauren Jones - Dietetics

Flaxseed as a Partial Flour Replacement in Muffins

Joseph Kitchen - Undeclared, Megan Godby - Undeclared, & Linda Swift - Undeclared

*The Great American Smokeout****

Elaine Knutson – Nutrition Dietetics

The Effect of Soy and Whey Protein Isolates on Homemade Cookies

Benjamin Linzy – History and Criminal Justice

Mussolini's Shadow War: The Struggle Against Organized Crime in Fascist Italy

Jennifer Martin** - Geoscience
Change Detection Techniques for Long-term Monitoring of the Surface Mining Region of Eastern Kentucky

Timothy Martin – Geo-Archeology, Janene Johnston – Geo-Archeology, Matthew Boling – Geo-Archeology, & Alessandra Daniel – Geo-Archeology
Archaeological Assessment of the 15Tr477 site near Canton, KY

Jason Merrick** - Geoscience
Change Detection of Florida Mangroves at the Northern Limit of Their Habitat

Jared Militello** - Biology
*Spatiotemporal Movement and Habitat Use of Re-introduced Juvenile Alligator Gar, *Atractosteus spatula*, in Clarks River, Kentucky*

Ruqayyah Nasser Moafa – Teaching English as a Second Language
Vocabulary Learning Strategies

Md. Niaz Morshed** - Geoscience
Modeling of the Effect of Sea Level Rise in the Coastal Region of Bangladesh

Kelsey Nance – Nutrition, Dietetics, & Food Management
Evaluation of Brownies Using Less Sugar and Sugar Substitutes

Riley Nance** – Elementary Education
Environmental Influences on Children's School Behavior

Kelcy Navrkal – Youth and Non-Profit Leadership, Jarrett Tole – Youth and Non-Profit Leadership, Sara Martinez – Exercise Science/Wellness, & Hannah Swinney – Youth and Non-Profit Leadership
*Fitness and Self Esteem Day****

Gina Nuzzo – Youth and Non-Profit Leadership, Ronald Pavlik – Youth and Non-Profit Leadership, & Adam Taylor – Integrated Studies
*Athletic Day/Night****

Ross Paschall** – Engineering Graphics & Design, Emily Shipley – Engineering Graphics & Design, & Spencer Gooch – Engineering Graphics & Design
Indoor Energy Harvesting System

Sam Pellock** – Chemistry/Biochemistry & Andrew Thompson - Mathematics
Testing Darwin's Naturalization Hypothesis Using Generalized Linear Models

Olivia Raffli - Psychology
Sibling Relationships and Personality Traits

Zachary K. Reeder** - Chemistry
Synthesis and Thermal Stability of Imidazolium-Containing Polyurethanes

Carlynn Rekosh** – Wildlife Biology
*Absence of *S. neurona* in Virginia opossums (*Didelphis virginiana*) in Calloway County*

Sijin Ren** - Chemistry
Intermolecular Interactions Between Each of Uracil and Adenine with Reactive Oxygen Species

Bradley Richardson** - Fisheries/Aquatic Biology
A Search for Species Identifiers Between Alligator Gar, Longnose Gar, Shortnose Gar, and Spotted Gar Using Morphological Metrics

Hannah Robbins** - Agronomy
Soil Organic Matter and Aggregation in Relation to Agricultural Systems

Kristen Rogers – Marketing, Erin Behbehani - Marketing, Celeste Chockley - Marketing, Ella Garnett - Marketing, & Cord Koch - Marketing
MSU Career Services - Student Quality Perceptions and Possible Improvements

Craig Schadler - Nursing
A Narrative Analysis of Baccalaureate Nursing Students' Nurse-Patient Clinical Reflections

Rebecca Selby – Dietetics
Acceptability of Gluten Free Cakes Prepared with Rice Flour and Xanthan Gum

James Smith** - Geoscience
Monitoring Sex Offender Compliance in the Pennyrile District of Western Kentucky

Demi St John** – Physics and Mathematics
Bright X-ray Point Sources in our Galaxy

Michael Stonewall** - Geosciences
The Application of GIS-based Logistic Regression for Landslide Susceptibility Mapping in the Appalachian Mountains: Harlan County, Kentucky

Elizabeth Tarter** – Biology & Alexander Earhart - Biology
Describing Tropical Termite Nest Growth and Decline Patterns Using Logistic Growth Models

Allison Theobald - Nursing
Moral Distress in Baccalaureate Nursing Students

Amanda Thomas** – Biological Sciences & Nhan Huynh – Biological Sciences
Determining the Northern Limit for Red Mulberry (Morus rubra) Using DNA-identified Individuals

Beatrice Turner - Biology
Genomic Analysis of Agrobacterium tumefaciens CRR14

Linden Villines - Psychology
Feeling Grateful in the Face of Tragedy

Matthew Wallace** – Zoological Conservation
Population Trends of Copes Gray Tree Frogs in Murphy's Pond Kentucky

Allison Weaver - Nutrition
Acceptability of Chocolate Cake Prepared with Bananas and Prunes as a Fat Substitute

Carli Whittington** – Biology, Carlynn Rekosh – Biology, & Chesika Crump - Biology
Experimental Analysis of the Relationship Between Parasite Burden and Cognitive Abilities in House Mice (Mus musculus)

Synthia Wilkins – Agriculture Technology, Kaytlin Young – Youth and Non-Profit Leadership, & Tim Washum - Telecommunications Systems Management
Christmas Bazaar

Oral Sessions

Liberal Arts Session

Ohio Room, Curris Center
Session Chair: Dr. Barbara Cobb
9:00 a.m. – 10:15 a.m.

Chase Barney – Liberal Arts
Augustine and the Will in the Roman Empire

Caleb Johnson – Liberal Arts
Student Fee for Sustainability at Murray State

Guinevere Lewis – Liberal Arts
A History of Earth Day

Jennifer Muth – Liberal Arts
A Correlation between Traumatic Brain Injury and Crime

Devin Wade – Liberal Arts: English & Psychology
Understanding How the Brain Perceives Colours and Patterns



Research Symposium

Barkley Room, Curris Center

Session Chair: Dr. Howard Whiteman

12:30 p.m. - 4:00 p.m.

Kaylin Boeckman – Watershed Studies

*Estimating Trophic Position of *Ambystoma tigrinum nebulosum* larvae in a western Colorado stream*

Patrick Bohac – Biology/Pre-Med

Specific Role of Glycolysis in Germ Cell Development

Morgan Geile – Conservation Biology

Conservation Strategies for Managing Endangered Amphibians in Response to Chytrid Fungus

Ann Gilmore – Watershed Science

*The Effects of the Herbicide Atrazine and Predator Cues on Larval Dragonflies *Ladona deplanata**

Tobias Landberg – Post-Doctoral Associate, Emily Clouse – Wildlife and Conservation Biology, Kathleen Mount – Biology, Howard Whiteman – Murray State University, Beatriz Willink – University of Costa Rica, & Karen Warkentin – Boston University
Tadpole Density Affects Jumping Performance Development During Metamorphosis in Two Arboreal Frogs

Michael Moore – Watershed Studies

Mother Knows Best: Investigating the Role of Maternal Effects on Amphibian Life Histories

Scot Peterson – Watershed Science

Using Benthic Macroinvertebrate Recolonization to Gauge Stream Community Response to Potential Disturbance Caused by Restoration

Grace Porter – Watershed Science

The Effects of Levee Building on Tree Growth and Soil in a Bottomland Hardwood Forest

College of Education: Student Teacher Eligibility Portfolios

Crows Nest, Curris Center

Session Chair: Ms. Jeanie Robertson

9:30 a.m. – 1:30 p.m.

Sarah Craft - Elementary Education

Charlsie Daniel - Middle School Education, Math/Science

Rachel Heller - Learning and Behavior Disorders/Elementary Education

Dawn Hopkins - Learning and Behavior Disorders/Elementary Education

John Newsome - Spanish Education/Secondary

Michael Shepherd - Political Science/Social Studies Certification

Kayla Smith - Interdisciplinary Early Childhood Education

Kristin Tinch - English Education/Secondary Certification and Spanish Education/Secondary Certification

Politics in Its Many Guises Session II

Ohio Room, Curris Center

Session Chair: Dr. Ann Beck

1:00 p.m. – 4:00 p.m.

Gregory Bone – Economics and Political Science

Testing for the Political Monetary Cycle in the United Kingdom and Australia

Alex Farrell – Political Science

Impact of Money in Senate Elections

Colton Givens – Political Science

Respecting the Establishment: Supreme Court Views of Religious Displays on Government Property

Devin Griggs – Political Science

Does Labor Still Labor for the Democrats?

Ed Hall – Political Science

Voters Influenced by the Polls

Erica Isbell – Political Science (8-12 Certification)

All About the Money

Alexis Jones – Political Science

The Death Penalty and its Effects on Crime

Jennifer Marks – Political Science

The Effect of the Relationship Between President and Congress on Passing Legislation in the Twentieth Century

Our Changing Environments - Geosciences Solutions from Local to Global

Mississippi Room, Curris Center

Session Chair: Dr. Robin Zhang

3:30 p.m. – 4:30 p.m.

Jennifer Martin - Geoscience

Flood Inundation Mapping in the Clarks River National Wildlife Refuge Using Lidar-derived Elevation Models

Md. Niaz Morshed - Geoscience

Consequence of Sea Level Rise to a Delta Country, Bangladesh

Caroline Schmidt – Geoarchaeology

Honors Thesis Defense: Comparing Horizontal and Vertical Microartifact Samples to Determine the Function of Mound C at the Poverty Point Site

Michael Stonewall - Geosciences

An Integrated Remote Sensing and GIS Approach to Assessing Landslide Hazard Management in the Appalachian Mountains of Eastern Kentucky

Thursday, April 18, 2013

Oral Sessions

Economics Senior Seminar

Ohio Room, Curris Center

Session Chair: Dr. David Eaton

11:00 a.m. – 2:00 p.m.

Students Names Forthcoming

Session Jane Austen's *Emma*

Ohio Room, Curris Center

Session Chair: Dr. Staci Stone

3:30 p.m. – 4:30 p.m.

Veda Riley – Secondary English Education

"Such a pretty charade": The Puzzle of Jane's Austen's Emma

Haley Russell – Creative Writing

The Woodhouse's Use of an Apothecary: The Ambiguous Mr. Perry

Allison Wilson – Secondary English Education

Love in Emma: An Expression of Austen's Desires

Modern Language Senior Colloquium

Barkley Room, Curris Center

Session Chair: Dr. Janice Morgan

3:30 p.m. – 5:30 p.m.

(listed in alphabetical order)

Amanda Baker - French

Joan of Arc as a Modern-day Political Symbol, Presented Through Theater and Film

Bailey Boyd – English Literature and Spanish

Reflections of the Outcast: Representations of Minorities in Federico Garcia Lorca's Poetry

Dylan Darnell – German and International Affairs

The Memory of a Nation: Society of East Germany in retrospect through Thomas Brussig's Helden wie wir and Wolfgang Becker's Good Bye, Lenin!

Gretchen Green – Japanese and Public Relations

Impurity and Modernity

Madison Lane – Spanish Education

Esperanza contra destino: represión de sueños por el machismo in El Sueño de América

Dana Luker – Spanish Education

Santo: defendedor de los desamparados, los d biles y los sordos

Haley McCuiston – Spanish/Teacher Certification

María, Full of Grace: Analyzing Cinematographic Aspects

Judy Ratliff - French

The Hell of the Subconscious

Caryn Shaw – History and Japanese

Higuchi Ichiyo's Suffering Heroines

Kari Shemwell – Spanish

The Influence of American Imperialism in Innocent Eréndira and Other Stories

Other

Faculty Recognition Banquet

Large Ballroom, Curris Center

Contact: Ms. Donna Miller

6:00 p.m. – 7:30 p.m.

(Faculty and Professional Staff Only)

**Gabriel Adams – Engineering Graphics and Design & Casey Butterworth –
Engineering Graphics and Design**

Mentor: Emre Bahadir

Energy Collection in Public Spaces

We have developed an alternative way of collecting energy in public spaces. More specifically from doors receiving high traffic. Currently, the doors in public buildings can operate by manually pushing and pulling them or automatically with an electrical motor. In our design we have developed a door operator that can convert the kinetic energy of the door opening and closing into electrical energy that is then stored for later use. The door operator will be capable of powering itself by collecting energy from regular traffic. The design can be applied to any public building such as libraries, student unions, dorms, etc.

Gloria Alverio – Youth and Non-Profit Leadership

Mentor: Roger Weis

Hygiene for Happiness

Hygiene for Happiness poster shows the results of the hygiene items drive that our group ran in association with the students of Murray Middle School. We spoke with Tonia Casey, executive director of Need Line of Murray and Calloway County and found that many people know about what Need Line provides to those in the community. Many know of the food items and financial assistance but not many realize that they also help to provide hygiene and cleaning items. Without the ability to keep yourself clean as well as your home, many people can succumb to illnesses, depression and even death. Through our project, we wanted to raise awareness with the young children, grades 4-8, of Murray Middle school and show them that they can get involved and help make a difference in other's lives, even being the young ages they are. We were able to collect almost 600 items in just one week. That number is one of the largest ever done in any kind of collection drive for the YNL350 class according to Dr. Roger Weis. Through our combined efforts, this project was able to help alleviate a little bit of the burden by Need Line for these items and was also able to help raise awareness for the future generations.

Amal Aljaddani – Geoscience, Christian Brown – Wildlife Biology, Michael Burzynski – Wildlife Biology, Clinton Cunningham – Wildlife Biology, Kyle Cunningham – Geoscience, Olivia DaRugna – Wildlife Biology, Justin Doss – Wildlife/Conservation Biology, Emily Dowell – Wildlife Biology, Brent Eugley – Wildlife Biology, Sarah Flarsheim – Conservation Biology, Morgan Geile – Conservation Biology, Mark Julian – Geosciences/Environmental Biology, Emily Knoth – Geoscience/Earth Science, Jessica Marshall – Geoscience, James McCallon – Geoscience, Madeleine Pratt – Wildlife/Conservation Biology, Matthew Prusinski – Wildlife/Conservation Biology, Michael Prymula – Geoscience, Carlynn Rekosh – Wildlife/Conservation Biology, Marcie Siders – Wildlife/Conservation Biology, Lauren Slingerland – Wildlife/Conservation Biology, Daniel Stephens – Wildlife Biology, John Stone – Geoscience, Nathan Truax – Geosciences/Environmental Geology, Katelyn Welch – Wildlife Biology, & Shellie Wilson – Wildlife Biology

Mentor: Robin Zhang

The Bee Creek Walking and Biking Trail Plan for the City of Murray

The city of Murray is polishing its image as one of the friendliest towns in the country. Murray's latest venture involves establishing a multi-use path starting at the rear of Murray Calloway County Central Park and ending at Highway 121. This path is planned to follow the banks of Bee Creek. Murray State University's Land Use Planning class is charged with establishing the best route for the path. We are basing the route on natural contour of the creek and the land surrounding it. The path will provide citizens of Murray with an exercise option as well as safe alternative for cyclist and pedestrians currently using U.S. Highway 641(N 12th Street), between the north end of town and the Lowes/Wal-Mart area. The planning process requires us to make many difficult decisions, such as crossing 12th Street and working around areas that are environmentally sensitive. Using maps we established a vague route. Armed with cameras, we physically surveyed the area making notes and taking pictures of obstacles and scenery that would eventually mold our visions for the path. After talking with city officials and some landowners along the proposed routes, we have established a plan that will serve all of the citizens of Murray while using the natural resources of Bee Creek wisely. If implemented, our proposal will improve the safety and well-being of Murray's citizens.

Jinyoung Baek – Food Nutrition

Mentor: Kathryn Timmons

The Acceptability of Green Tea Powder at Different Levels in Cookies

The purpose of this experiment is to figure out the acceptable amount of green tea powder for adding into cookies. Green tea is known for its health effects; powerful anti-oxidant, inhibiting the growth of cancer cells, lowering LDL cholesterol levels, reducing cardiovascular diseases. In this experiment, I will make three groups and each group will use the different amount of green tea powder, 5g and 10g, 20g respectively. Clearly, the amount of other ingredients will be equal. Different amount of green tea powder will affect sensory characteristics, and acceptability of adding green tea powder into cookies. The subjects will be asked how different the each cookie is.

Amanda Baker - French

Mentors: Therese Saintpaul & Janice Morgan

Joan of Arc as a Modern-day Political Symbol, Presented Through Theater and Film

Joan of Arc was an average teenage girl until one afternoon in 1424 when the voices of Saints Michael, Catherine, and Margaret spoke to her and told her she must save France from the English during the Hundred Years' War. Her life, victories, and defeats were all very real, but to modern France they have become somewhat of a mythical representation of right-wing politics, French nationalism, and the Catholic Church. This phenomenon of using Joan as a nationalist symbol has been illustrated frequently in works of literature, cinema, and theater. This presentation will focus primarily on three works: *La Passion de Jeanne d'Arc*, a 1926 film by Carl Dreyer; *L'alouette*, a 1952 play by Jean Anouilh; and *The Messenger*, a 1999 film by Luc Besson. The different facets of these works directly reflect the time-period during which they were created: Depression-era, post-WWII, and modern day. This presentation will show the way in which each author portrays Joan based on significant events of their time and relate this to Joan as a national political and religious symbol.

Kullen Balthrop - Psychology

Mentor: Paula Waddill

It is Not What You Wear, but How You Wear It

There is a lack of research for initiation of relationships. Research into narcissism, body-esteem, and self-esteem has touched upon their involvement in relationship initiation. This study was designed to determine if gender and type of dress influenced the likelihood of approach, or if there was an interaction between gender and dress on likelihood of approach. The study found that there was no significant relationship between gender, dress, and likelihood of approach. However, there was a significant positive correlation between self-esteem and approach, and narcissism and approach. It supports the idea that personality might play a bigger role in likelihood of approach than outside influences, though more research is needed in this area.

Chase Barney – Liberal Arts

Mentor: Barbara Cobb

Augustine and the Will in the Roman Empire

A look at how the decline of the Roman Empire influenced Augustine of Hippo's views on the freedom of the Will.

Ashley Baxa – Youth and Non Profit Leadership, Mary Bailey – Undeclared, & Peter Hines - Undeclared

Mentor: Roger Weis

Doggone Safe

Doggone Safe was an education program merged with a Pet Food Drive Competition. The program was for the Third Graders of Murray Elementary School. The education program consisted of 7 rules on how to be safe when interacting with dogs. The children were then shown some actions and asked whether that was a safe way to interact with dogs. Then the children had a chance to practice and interact with the dog therapy team. The second part of Doggone Safe was the Pet Food Drive Competition. All of the 5 third grade classes competed by bringing in dry dog and cat food. The class that brought in the most food would be rewarded with a party that consisted of snacks and a movie. The total amount of food collected and donated to the Humane Society of Calloway County was 236lbs of dry pet food.

Cassie Benson – Creative Writing

Mentor: Staci Stone

Redemption for the Soul of a Monster in Bram Stoker's Dracula

This paper explores the state of the soul of Dracula and the other vampires mentioned in Bram Stoker's Dracula. The state of the soul necessarily leads to a discussion of religious beliefs regarding souls in general and how this is addressed in the novel. The paper focusses on the character Mina and the importance that she places on souls and the salvation of these souls.

Kaylin Boeckman – Watershed Studies

Mentor: Howard Whiteman

Estimating Trophic Position of *Ambystoma tigrinum nebulosum* larvae in a western Colorado stream

In fishless systems, larval Arizona tiger salamanders (*Ambystoma tigrinum nebulosum*) feed heavily on invertebrates and have been shown to induce trophic cascades in lentic ecosystems. The role they play in lotic food webs is not well understood. In western Colorado, *A. t. nebulosum* are able to breed in streams in the absence of native Colorado cutthroat trout (*Oncorhynchus clarkii pleuriticus*). In order to estimate the trophic position of salamander larvae in this system, stomach samples were collected by gastric lavage. Prey diversity and abundance was determined from the stomach samples. Trophic position of prey was used to estimate the trophic position of *A. t. nebulosum*. Larval salamanders were found to feed largely on primary consumers, particularly Ephemeropterans and aquatic Hemipterans, while predacious dytiscid beetle larvae made up a smaller portion of the diet. Information collected from this initial investigation will facilitate design of mesocosm experiments aimed at testing the strength of salamander induced trophic cascades in lotic systems.

Patrick Bohac – Biology/Pre-Med

Mentor: Alexey Arkov

Specific Role of Glycolysis in Germ Cell Development

Germ cells belong to a special class of stem cells which give rise to the next generation organisms. Recently, we have found that several enzymes of glycolytic pathway play a specific role in germ cell development. In particular, these enzymes are enriched in germ cell organelles referred to as germ granules and they contribute to the protection of germline DNA from detrimental mutations. This study aims at testing a hypothesis that the glycolytic enzymes function in germ cell development by enhancing the rate of glycolysis as is seen in tumor cells and other types of stem cells. The significance of glycolysis for stem cell maintenance and tumorigenesis will be discussed.

Gregory Bone – Economics and Political Science

Mentors: Martin Battle & David Eaton

Testing for the Political Monetary Cycle in the United Kingdom and Australia

If a political monetary cycle existed then prices would be abnormally high as the time to an election moved closer. A politician's constituents would be paying higher prices simply so they could have a greater chance of being elected. Many tests for a political monetary cycle (politicians manipulating the money supply to increase economic performance and their chance of being elected) have already been performed on central banks with a clear pre-independence and post- independence period. However, if one views inflation targeting (a central bank's adoption of a targeted rate of inflation per year) as a policy that makes a central bank more independent, then it is possible to search for the political monetary cycle in countries who have adopted inflation targeting. This paper uses a Taylor Rule (a rule stating how interbank loans should respond to changes in GDP and inflation) estimation along with election cycle variables to search for evidence of a political monetary cycle in Australia and the United Kingdom for the period 1980 to 2012. If the political monetary cycle did exist then one should see a positive relationship between the election cycle variables and interbank loans. After analysis this relationship was found to be true to the hypothesis but the variables were not statistically significant.

Cheyenne Bourland – Psychology

Mentor: Paula Waddill

The Relationships between Appearance Anxiety, Body-Esteem, and Social Boldness

Social boldness can be a rewarding personality trait to possess. This study looked at the relationships between social boldness, appearance anxiety, and body-esteem. In this study social boldness was defined as being more outgoing or extroverted and having less social anxiety toward the opposite sex. Participants completed measures of appearance anxiety and body-esteem then viewed photos of physically attractive members of the opposite sex on a PowerPoint slideshow. The participants then filled out a final survey to measure their social boldness. The relationship between social boldness and appearance anxiety was not significant. However, social boldness and body-esteem were significantly positively correlated. Those who felt better about their bodies indicated that they would be more outgoing toward members of the opposite sex in social situations than those who felt less positive about their bodies.

Bailey Boyd – English Literature and Spanish**Mentor: Mica Garrett*****Reflections of the Outcast: Representations of Minorities in Federico Garcia Lorca's Poetry***

Federico García Lorca's name resounds throughout his home of Spain as that of the quintessential Spanish writer. He prolifically produced poems, drawings, musical compositions, and plays with themes that resonate universally. While Lorca's legacy as a Spanish artist is undoubted, Lorca touched more than the lives of the Spanish: deeply influenced by the gypsies in his native Andalucía and his trips to New York and Cuba and his exploration of the African-American culture of Harlem, marginalized peoples frequently appear in Lorca's poems. Lorca's greatest gift was to see the "other" as a brother, and his affinity toward these peoples stems in part from his own homosexuality. Using literary figures, allusions, and irony, Lorca deconstructs the degraded images of these "outcasts" (the gypsy, the African-American, and the homosexual) seen by society, and through his poetry encourages them and lends them the voice and power they had yet to achieve.

Bailey Boyd – English Literature and Spanish**Mentor: Staci Stone*****Tragedizing the Villain: Dracula as an Aristotelian Tragedy***

The legend of the vampire has permeated popular culture in recent years, but this popularity is due in part to Bram Stoker's Dracula. His famous villain inspires fear and excitement in multiple generations, and the image of Dracula remains an object of horror. Although the title character is probably universally considered the villain, certain aspects of Dracula fix the novel within the realm of Aristotelian tragedy. Dracula exhibits his "tragic flaw" similar to that of Christopher Marlowe's Doctor Faustus, and his reversal of fortune dooms him to live a life of evil. One may even feel a catharsis in Dracula's death at the end of the novel. In these broad (and other more narrow) ways, Dracula adheres to Aristotle's conventions of tragedy, with Dracula himself emerging as the tragic hero.

Anthony Boyken - Psychology**Mentor: Paula Waddill*****The Effects of Fast Music on Memory***

This study was conducted to determine if the speed of music had a significant negative effect on a person's memory. The hypothesis of the study was that participants in the fast music condition would remember fewer words than those in the slow music condition. Forty-seven students at Murray State University were participants in the study. The participants were asked to watch a PowerPoint of 25 words. While watching the PowerPoint participants would either listen to fast, slow, or no music. After this task was completed participants in the study were then asked to perform an intervening task. Once this intervening task was over participants were asked to write down as many words from the PowerPoint as they could recall in any order. The hypotheses of the study were tested with planned comparisons using one-tailed independent t-tests. The results of the study showed that participants in the fast condition remembered significantly fewer words than those participants in the slow and control condition. Participants in the slow and control condition did not differ significantly in the proportion of words from the PowerPoint.

Hayden Brown – Environmental Geology

Mentor: Amanda Keen-Zebert

The Effect of Grain Size Distributions of Sediment on the Incision Rates of Bedrock River Channels

To determine the effect that sediment grain size distribution has on the incision rates of bedrock river channels, abrasion mill experiments were performed. Twenty centimeter diameter sandstone disks were used to simulate a bedrock river channel and sediment grain size distributions were varied by sorting; poorly sorted, moderately sorted, and well sorted sediment samples were used as the sediment load. The erosion rates of the bedrock under each sediment sorting will be compared to determine the extent that grain size distribution has on incision rates of bedrock river channels. It is expected that moderately to poorly sorted sediments should reduce the critical shear stress needed to transport the sediment in the abrasion mill. If all variables except the grain size distribution are kept constant, then the sediment with greater variance in sediment size should exhibit greater transport, thereby increasing the frequency of impacts of a saltating bedload and thus the erosion rate of the channel bed. Because bedrock channel incision largely sets the rate of base level transfer to hillslopes and catchments upstream, this study is fundamental in understanding the temporal nature of landscape evolution.

Carolyn Potter Buchholz – Teaching English as a Second Language

Mentor: Juyoung Song

The Effect of Teacher Responses on a Student's Willingness to Communicate

Through teacher/student interaction, the effect of a teacher's responses to a student's utterances is discovered. Different responses result in differing levels of the student's willingness to communicate. This has significant implications for the ESL classroom, especially when the teaching philosophy centers on Communicative Language Teaching (CLT).

Mayra Alejandra Chavez – Nutrition Sciences

Mentor: Kathryn Timmons

Creating a New Source of the Carotenoid, Lycopene

This experiment is focused specifically in creating a new source of a specific carotenoid; the lycopene. Lycopene is a carotenoid with antioxidant properties, which is founded in tomatoes or tomatoes products mainly in tomato paste and ketchup, (Clinton, S. K., 1998) and can prevent cancer, this substance form part in 50% of the total carotenoids in the human body. The purpose of the study is to identify which type of tomato is the most indicated to create a tomato jam, based on texture, flavor, color, and viscosity; characteristics that each type can add to the preparation. This experiment is looking for the development of a new product (at least in this area), so the test an affective test is convenient to evaluate the quality. In this analysis the judges will evaluate the acceptability between the two tomato jams. An hedonic scale will be used to detect if the sample like or dislike. The study also has the purpose of know the characteristics that can affect to the acceptability such as color, texture, consistency, and flavor. The objective analysis will be performed with purpose to verify the results of the sensory analysis. The analysis are: Brix measure: using a refractometer, to see the percentage of sugar of the final products. pH measure: using a pH meter, to check how this result affect the perception of sourness or sweetness characteristics of the two tomato jam.

Jared Choate – Political Science

Mentor: Ann Beck

Legislative Term Limit's in Regard to Madison

Term limits for legislative representatives continue to be a highly debated topic in the political realm of the United States. There are many arguments for and against term limits on elected representatives but one question that arose through my research was whether or not the father of our constitution, James Madison, would support them. This article, Legislative Term Limits in Regard to Madison, argues that the necessity of legislative term limits can be derived from Madison s writings. I use primary analysis of the Federalist Papers #10, #39, #52, #53, and small parts of #55 and #57; as well as secondary analysis of articles relating to this topic. My findings are that while Madison never directly says there should be term-limits on elected representatives, he does show his fear that longevity in office (career politicians) leads to the formation of factions and/or tyranny based on self-interest. I conclude that even though Madison did not see fit to incorporate term limits on elected representatives then, in today s political world he would deem them necessary.

Catie Clark – Agriscience Technology, Chad Bell – Agriscience Technology, & Tamara Phillips - Nursing

Mentor: Roger Weis

Halloween Health-A-Thon

Our project for YNL 350 was to work with residents at Hickory Woods. Our projects name is Halloween Health-A-Thon. Our goal was to help increase their awareness by setting health and wellness goals that effect mind, body, and spirit. We met with the residents 3 different times and our last meeting included a halloween party that rewarded them for great participation for setting goals and had a halloween costume contest.

Micah Clayton – Political Science

Mentor: Ann Beck

United States Antitrust Policy

The hypothesis for this paper is the amount of investigations filed by the Federal Trade Commission (FTC) and the Department of Justice(DOJ), and the budgetary expenditures are correlated positively with the amount of monopolistic practices in the American economy. The method used is statistical analysis of DOJ and FTC workload and budgetary data sourced from the respective agencies. The number of investigations and size of for the two agencies are in fact positively correlated with the amount of monopolistic practices in the United States due to the “use it or lose it” budget model that is currently in place.

Joshua Clifford - Computer Science

Mentor: Bob Pilgrim

Android Controlled UGVs and Their Practicality for Industrial Use

In today's technology-driven world, mobile devices have become a natural facet in our personal and social lives, keeping us on task and connected to the outside world. However, industrial and military application of mobile devices seems to be lagging behind. Recently, the United States military adopted Google's Android platform, and are now looking into equipping soldiers with secure phones and tablets to better enhance their abilities in combat. The military also uses several models of unmanned ground vehicles (UGVs) for reconnaissance and action in areas where it is dangerous or impossible for humans to enter. UGVs can be teleoperated or autonomous, but in the case of teleoperated vehicles, the equipment needed to control the vehicle is often bulky. There have been efforts made to replace the controls with various video gaming controllers, but even this solution seems redundant. The solution that will be explored in this project is a pairing of the two technologies. This solution will require the design and construction of a UGV along with an Android application that is capable of connecting to, operating, and monitoring the UGV with low latency and high accuracy. It is important to note that this project will not only have potential military application, but industrial and civilian application as well. There are many fields that require the use of UGVs such as search and rescue, security, and environmental monitoring. This package should be flexible enough to meet the needs of these and other operations.

Emily Clouse – Wildlife and Conservation Biology & Kathleen Mount – Biology
Mentors: Tobias Landberg & Howard Whiteman

Grey Tree Frog Metamorphic Morphology Affects Jumping Performance

Locomotor modes vary greatly throughout development depending on the life history of an organism. Amphibian metamorphosis is especially interesting because tadpoles wiggle their tails while frogs move with their limbs. Predators prey on this awkward transition stage preferentially. We tested the hypothesis that frog jumping performance increases with increasing limb and body size (scaling) and decreases with tail length (because tails drag and stick to the substrate). During the summer of 2012, Cope's grey tree frogs (*Hyla chrysoscelis*) were raised in forty-eight 110-Liter trash cans filled with water and some leaf litter arranged in eight 10'-diameter tanks at Hancock Biological Station. To generate variation in body size, tadpoles were raised in high, medium, and low densities. As metamorphosis began, each froglet was sampled from their tanks and digitally stimulated to jump three times in an arena that was marked by 1 cm increments and then released. Tibia-fibula, snout-vent, and tail length, stage and density were predictor variables in an analysis of covariance to predict avg. jump length (ANCOVA, $n=176$, $R^2=0.75$). Jumping performance increased with tibia-fibula and snout-vent length, and decreased with tail length as predicted. However, the effect of the tibiafibula depended on tail length ($p=0.03$). Mass and density had no effects. Density decreased body size as expected but did not have any direct effects on jumping performance. Together these results indicate that the larval density environment has important phenotypic effects on jumping performance via morphology during the vulnerable metamorphic transition.

Tyler Collins – Political Science

Mentor: Ann Beck

Local Option Alcohol Votes in Kentucky: Effects on Size of Area and Alcohol Type on Outcome

There are several types of local option alcohol votes in the state of Kentucky. There can be a vote by county, city, or precinct and there are seven categories of alcohol votes. The seven alcohol categories are Wet/Dry, Limited Restaurant, Golf, Winery, Beer Only, Qualified Historical Sites, and Expanded Sales. This argues that the "smaller and more restrictive" the vote, such as a precinct vote and a beer only vote is more likely to pass than a "larger and more expansive" vote such as a county vote and Wet/Dry vote.

Lucas A. Daily - Chemistry**Mentor: Kevin M. Miller*****1H NMR and Thermal Analyses of 1,4-Dialkyl-1,2,4-triazolium Ionic Liquids***

A series of 1,4-dialkyl-1,2,4-triazolium ionic liquids were synthesized and subjected to ¹H NMR and thermal analyses. Comparison of the ¹H NMR data for the 1-butyl-4-methyl-1,2,4-triazolium cation with various counteranions indicated a linear correlation between the shift of the H5 proton on the triazolium ring and the hydrogen bond accepting ability of the anion. Differences in mass loss and heat capacity as functions of temperature were measured for multiple counteranions as well as for various alkyl chain lengths at the N-1 position. Analysis of the melting points (T_m) by differential scanning calorimetry (DSC) indicated that a longer alkyl chain at the N-1 position resulted in a higher T_m value. Thermogravimetric analysis (TGA) indicated that the onset of thermal decomposition (T_d) generally decreased as the chain length at the N-1 position increased. The thermal stability of the triazolium salts also loosely correlated with the basicity (ion affinity) of the counteranions used where use of the iodide [I⁻] or trifluoroacetate [TFA⁻] anion resulted in the lowest observed onset of decomposition.

Dylan Darnell – German and International Affairs**Mentors: Meg Brown & Janice Morgan*****The Memory of a Nation: Society of East Germany in retrospect through Thomas Brussig's Helden wie wir and Wolfgang Becker's Good Bye, Lenin!***

It is easy for those who lived west of the German Democratic Republic (GDR) to imagine it as a completely tyrannical system that suppressed all manner of freedom and easier still to imagine how free its people must have felt after the Berlin Wall fell. However, this was not necessarily the case. Certainly there were citizens that wished for the fall of the Berlin wall and reunification and embraced western culture. There were also GDR citizens who experienced a deep sense of loss after the GDR's dissolution. Thomas Brussig's novel *Helden wie wir* reflects the authoritarian nature of the GDR policies and the characteristics of citizens that silently opposed them. In contrast the film *Good Bye, Lenin!* provides reasons for why certain citizens valued the GDR and why they wished to return to it when it was finally gone. As a whole the novel and film portray identities of former East German citizens which still live on in German society today. By understanding how society actually functioned in the GDR we can begin to further understand current societal issues in Germany today.

Elizabeth Davis - Psychology

Mentor: Paula Waddill

Perceptions of Academic Dishonesty

This study tested the correlation between an individual's personality traits of conscientiousness, honesty, and conformity, and the unacceptability of justifications for academic dishonesty. The study consisted of 54 Murray State University college students, about 20 years old. The participants were asked to complete a survey that consisted of questions about their demographic information, their opinions on the unacceptability of justifications for academic dishonesty through a rating scale, and the rating of their personality traits of conscientiousness, honesty, and conformity. In the justifications section the participants rated how unacceptable they found each justification and in the personality trait section they rated themselves on each traits' characteristics. Conformity was significantly correlated with unacceptability. Those with a more conforming personality tended to find justifications more unacceptable. There was no significant relationship between the unacceptability of justifications for cheating and the traits conscientiousness and honesty, or GPA. A linear regression analysis indicated that the three personality traits and GPA accounted for 25% of the variance in unacceptability of justifications, which is significant. This shows that how conforming an individual's personality is may be related to whether or not they are academically dishonest.

Katie Davis – Youth and Non-Profit Leadership, Michelle Baird – Youth and Non-Profit Leadership, & Matthew McNutt – Broadcasting

Mentor: Roger Weis

Fall Festival at Hickory Woods

On October 18, 2012 we did a Fall Festival at Hickory Woods Assisted Living in Murray, KY. We had around 15 residents of Hickory Woods attend our Fall Festival. We had different games like ring toss, pin drop, and apple toss for the residents to play. Then we had refreshments for everyone after the event, and enjoyed interacting with the residents and getting to know them. We addressed developmental needs by using Maslow's hierarchy of Needs, and focused on planning our program around the needs of affiliation, esteem and self-actualization. The developmental competencies that we addressed in our event were health and physical categories and social activities. Our games allowed residents to participate in non-strenuous physical activity. The fall festival provided socialization opportunities to the residents. Our event was a great success, and an event that should be completed yearly!

John Eads – Social Work

Mentor: Kala Chakradhar

Cultural Relativism in Cross-Cultural Social Work Settings

Social workers are bound by values and principles set forth in the Code of Ethics and expected to exemplify certain traits and characteristics. Two of the ethical principles in the Code of Ethics call for social workers to be knowledgeable of potential cultural differences while the Social Workers Ethical Responsibilities to Clients specifically calls for cultural competence. The Code of Ethics calls for social workers to 1) understand culture, recognize its function in human behavior, and recognize the strengths that exist in all cultures, and 2) be knowledgeable of clients culture and provide services in a culturally competent manner. This is included in the Code of Ethics because an individual's culture has the potential to affect not only obvious differences such as food and dress, but also the way an individual perceives his or her problems and the way an individual perceives potential solutions to their problems and the outcomes of potential solutions. Affecting all aspects of life from childbearing and parenting techniques to a general sense of community and belonging, understanding the culture of clientele is vital to ensuring that proper services are provided at any level of practice. To do so, one must practice with cultural relativism. The research herein will attempt to answer questions such as: what is cultural relativism; how is cultural relativism related to culturally competent social work practice; and why is it important for social workers to practice cultural relativism in cross-cultural settings.

Alexander Earhart – Biomedical Sciences

Mentor: Claire Fuller

Effects of Atrazine on Neurodevelopment and Degeneration in Drosophila melanogaster

Drosophila melanogaster, the common fruit or vinegar fly, is used commonly to study the effects of effects of toxins in regards to developmental and degenerative processes. Atrazine, an herbicide used to prevent the spread of weeds and leafy grasses, is known to cause adverse development in most animal models tested. Evidence has suggested this chemical results in neurological deficits similar to known developmental and degenerative conditions. Wild-type *D. melanogaster* larvae were exposed to increasing concentrations of atrazine to test for neurodevelopmental irregularities; wild-type adults were exposed to these same concentrations to test for neurodegeneration. All tests performed were specific for gauging neurological concerns. The resulting data suggests that atrazine affects both neurodevelopment and degeneration in *D. melanogaster*.

Bethany Eschman, Morgan Masterson, & Dylan Stinson – Youth and Non-Profit Leadership

Mentor: Roger Weis

YNL Ambassadors

On November 11th Morgan Masterson, Dylan Stinson, and I gave a presentation to 15-20 sorority women who had come across the problem of not knowing what they wanted to do with the rest of their life. During our presentation we informed them about the vast number of Non-profit organizations throughout the United States. We explained to them that Non-Profit organizations are growing at a rapid pace and an YNL degree would be extremely beneficial for them upon graduating and entering the job market. YNL degrees prepare students for leadership roles in youth and human services and other non-profit organizations while also preparing them to know how to execute and produce programs for YNL businesses. We told them that an YNL degree trains them in program planning and helps them to be able to think through the many obstacles they may face while doing so. The YNL program at Murray State certifies more students to work in Non-Profit organizations than any other university program in the United States. We set up YNL information tables in the Curris Center and explained to the students the benefits and opportunities through a YNL degree. During these sessions we would have many students approach our table and ask us questions regarding YNL and why they should look into it for their future. We addressed their questions and also added that Non-profit organizations will put you into positions to find out what you are truly passionate about and help you make a difference in your community and the world as a whole.

Rachael Evansco - Psychology

Mentor: William Zingrone

Perception of Upbringing and Personality Traits

This project seeks to identify people's perceptions of their home life and upbringing and how this affects their personality, as ranked by the "Big Five" personality traits. Questionnaires will be given to PSY 180 students to investigate the relationship of the participants' scores on the "Big Five" personality traits of openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. The following predictors will be used to relate to upbringing satisfaction: parent's marriage status, home life satisfaction, number of siblings, happiness in school growing up, and satisfaction among peers. To measure participants' satisfaction with their upbringing, I will be using the shortened form of the Egna Minnen Beträffande Uppfostran (EMBU) scale (Arrindell et al., 1999). It is a self-report, parental bonding instrument which intends to measure adolescents and children's perception of three main aspects of parenting styles. I am also going to use the revised NEO Personality Inventory to measure participants' "Big Five" personality traits ("Big Five," 2013). Correlation and regression analyses will be conducted to examine the relationship between participants' personality traits and perception of their upbringing. I hypothesize that those who report greater satisfaction in areas related to childhood upbringing, school satisfaction, and satisfaction among peers will tend to score higher in the "Big Five" personality traits mentioned above. By examining people's personality traits and perceptions of their upbringing, we can gain a better understanding of the influences that home life satisfaction can have on personality going into adulthood.

Alex Farrell – Political Science

Mentor: Ann Beck

Impact of Money in Senate Elections

In the Impact of Money in State Elections, the relationship to the amount of money a candidate raised and the likelihood of being elected was examined. Since elections shape politics, it is then important to see if money can corrupt the one person one vote rule in democracy. The method of discovery used in the research was the analysis of secondary scholarly research in the field within the last forty years. The hypothesis of the paper was that the more money a candidate acquired in an election cycle the less likely they were of actually being elected. The findings showed that money does not directly impact a senate candidate's chance to win in any particular election. The conclusion was that the likelihood of winning or losing was impacted more from the control variables (quality of the campaign strategy, group and party endorsement in the election, and the amount of media coverage) than the amount of money a senate candidate actually raised.

Meredith Freeland - Dietetics

Mentor: Kathryn Timmons

Effects on Color, Flavor and Moisture When Added Fat in a Store-bought Brownie Mix is Replaced with Applesauce or Black Beans

The purpose of this experiment is to determine if replacing added fat in a store-bought brownie mix with black beans or applesauce will positively or negatively alter the color, flavor or moisture of the finished product. Replacing added fat with applesauce or black beans effectively increases fiber content and lowers the total fat grams and total caloric content of the finished brownies.

Morgan Geile – Conservation Biology

Mentor: Howard Whiteman & Warren Edminster

Conservation Strategies for Managing Endangered Amphibians in Response to Chytrid Fungus

The chytrid fungus *Batrachochytrium dendrobatidis* (Bd) has been linked to mass mortalities of a variety of amphibian species world-wide. This fungal disease appears to be one of the few pathogens that continuously emerges in pristine ecosystems, and is therefore a critical current issue in conservation biology. Boreal toads (*Anaxyrus boreas*) have been experiencing population declines due to chytrid throughout their range. In contrast, tiger salamanders are resistant to the disease and can serve as a sentinel of Bd. The goal of this project was to (1) test for the presence of Bd in aquatic habitats located in the Grand Mesa-Uncompahgre Gunnison (GMUG) National Forests (Colorado), in order to support the restoration of the boreal toad, and (2) to research applicable methods for the investigation of the chytrid fungus, in order to increase understanding of transmission probabilities and to increase sampling efficiency for future investigations. The range of Bd in the GMUG was determined by swabbing adult tiger salamanders for tissue/zoospore samples that are found in aquatic habitats that are near areas suitable for toad reintroduction. The only site found positive for chytrid was located within Grand Mesa; all sites near the few remaining boreal toad populations were chytrid-free. Future investigations will increase the sample size and provide more insight into the distribution of Bd in the GMUG. Furthermore, the application of spatial and environmental data to species distribution models will be used to predict previously unknown infected areas, increase understanding of transmission probabilities, and improve sampling.

Morgan Geile – Conservation Biology

Mentor: Howard Whiteman

Spreading the Disease: Using Tiger Salamanders as Sentinels of Chytrid Fungus for Boreal Toad Restoration

The chytrid fungus *Batrachochytrium dendrobatidis*(Bd) has been linked to mass mortalities of a variety of amphibian species world-wide. Unfortunately this fungal disease appears to be one of the few pathogens that continuously emerges in pristine ecosystems, and is therefore a critical current issue in conservation biology. High elevation boreal toads (*Anaxyrus boreas*) are one species that has been suffering population declines due to chytrid in Colorado. However, not every infected host suffers mortality. Tiger salamanders (*Ambystoma tigrinum*) are resistant to the disease and can become a pathogen reservoir species, therefore serving as a sentinel of Bd. The goal of this study was to test for the presence of Bd in aquatic habitats located in the Grand Mesa-Uncompahgre-Gunnison (GMUG) National Forests, in order to support the restoration of the boreal toad. Many of the boreal toad populations have been reduced or gone extinct within this area, and possible reintroduction locations were tested for presence of Bd by swabbing adult tiger salamanders for tissue/zoospore samples which were found in aquatic habitats that are otherwise suitable for toad reintroduction. Samples were collected during the summer 2012 where 9 ponds and 157 salamanders were sampled. Results showed one positive site for chytrid. Analysis was done in collaboration with the Colorado Division of Parks and Wildlife and results contributed to the chytrid distribution data of the region. This research directly aids boreal toad restoration and also served as a contribution to the overall understanding of the range and proliferation of this enigmatic fungus.

Michael Chaise Gilbert – Aquatic Biology

Mentors: Michael Flinn & Haluk Cetin

Remote Sensing Analysis of the Seasonal Variation of Chlorophyll-a concentration in Kentucky Lake using Landsat images to determine gradients in habitat quality Bighead and Silver C

Landsat images collected during each season from 2011, were obtained from the U.S. Geological Survey Global Visualization Viewer. The images were processed and analyzed using ERDAS Imagine and Microsoft Excel software packages. Bighead and Silver Carp metadata (such as location found) were recorded when the specimens were collected (and will continue to be collected as the project continues into 2013). Images from each season were analyzed to determine the variation of Chlorophyll-a concentrations from season to season (Winter, Spring, Summer, and Fall) across Kentucky Lake. Silver Carp feed primarily on phytoplankton, so we expect that their density across the lake would shift with phytoplankton density over seasons. Further, changes in phytoplankton density have been shown to positively influence zooplankton densities, the primary diet of Bighead Carp, and expect that Bighead carp densities would be similar to Silver carp. This data will be used to help predict the movement of the invasive asian carp: Bighead (*Hypophthalmichthys nobilis*) and Silver Carp (*Hypophthalmichthys molitrix*).

Ann Gilmore – Watershed Science

Mentor: Claire Fuller

***The Effects of the Herbicide Atrazine and Predator Cues on Larval Dragonflies
Ladona deplanata***

Predicting the fate of agricultural chemicals in aquatic communities is an important goal for ecologists. Atrazine is a common herbicide found in freshwater habitats worldwide with numerous negative effects on aquatic wildlife. Typical concentrations are relatively low (~100 ppb), yet may impair wildlife behavior, physiology, and fitness traits. Recent research indicates that effects are often magnified in the context of community interactions. Because macroinvertebrates are a keystone species in aquatic habitats we sought to determine how sublethal concentrations of atrazine (80 ppb) and predator cues (*Anax junius*) affect larval dragonflies (*Ladona deplanata*) throughout development. We used a split-plot experimental design with aquatic mesocosms to test the interaction of these stressors over a six-week period. We tested both stressors on immune parameters, growth, and fat storage, phenotypically plastic traits that have fitness implications for adult dragonflies. Preliminary analyses using two-way ANOVAs indicate a significant interaction evident after two weeks of exposure with predator cues significantly affecting growth and immune parameters over the entire period. At six weeks, the effects of atrazine was dependent on the specific immune response measured. The results of our study indicate that sublethal atrazine exposure affects immune function in larval dragonflies with implications for parasite resistance and the potential for tradeoffs between growth and immune investment. In the context of a natural community, sublethal herbicide exposure may be intensifying the effects of predators with implications for survival.

Tosha Gilpin – Environmental Geology

Mentor: Haluk Cetin

***Mapping of Environmental Change Caused by Eruption, Piton de la Fournaise,
Réunion***

The main goal of this project is to show the environmental change caused by a volcanic eruption. The area of interest is Piton de la Fournaise, an active volcano on the island of Réunion. This volcano has had a few recent eruptions, one of which occurred in 2001-2002. The project focuses on environmental change, such as vegetation destruction, caused by the eruption by comparing and contrasting Landsat satellite images, acquired from the US Geological Survey (USGS), from before and after the eruption.

Colton Givens – Political Science

Mentor: Ann Beck

Respecting the Establishment: Supreme Court Views of Religious Displays on Government Property

The strong religious history of the United States combined with the important role of government in public life necessarily leads to a significant amount of interplay, and sometimes conflict, between the two realms. Such interaction is regulated through the Free Exercise and Establishment Clauses contained in the First Amendment to the US Constitution. This paper seeks to synthesize and clarify the current state of the law concerning the First Amendment constitutionality of religious displays, both publicly and privately funded, on government-owned property. Through a review of Supreme Court cases from the 1960s onward dealing with such displays, the legal reasoning of majority, concurring, and dissenting justices is examined to see what standards justices have applied in evaluating this specific constitutional question. This analysis takes into account the decision-making process of the Court, as well as the ideological background of individual justices. I find that while the Court has not always used the same standard to evaluate such cases, over time the Court's definition of what is acceptable and what is not has become clearer. This clarity is important for local governments and lower courts who routinely deal with these issues.

Kaleigh Gray - Psychology

Mentor: Paula Waddill

Profanity: Why is it so D@#% Important?

This study examined the effect that use of profanity had on how personality characteristics were perceived. Participants read a scenario containing dialog in which the speaker was either male or female and either cursed or did not curse. Participants' overall perception of the personality characteristics of the speaker was significantly more negative when speakers used curse words as opposed to when they did not use curse words. The gender of the speaker not did significantly affect how negatively the characteristics were perceived. A factorial analyses of covariance indicated that when the frequency of the participants' own cursing was taken into account the speaker who cursed was still perceived significantly more negatively than the speaker who did not curse.

Gretchen Green – Japanese and Public Relations

Mentors: Masayo Kaneko & Janice Morgan

Impurity and Modernity

Japan has a long, cultural history of being concerned with purity and impurity. Even in the earliest records of Shinto creation myths, we can find the elements that relate to us what is clean, unclean, and how that which is unclean can be made pure. Over the years, with advances in science, medicine and exposure to foreign cultures, these views on cleanliness have evolved with society. But, just how much have they changed and what have they become? Hayao Miyazaki's *Spirited Away* and Yojiro Takita's *Departures* provide two contemporary examples for modern views on purity and impurity. This presentation will explore what changes have occurred based on what is presented in the film and will attempt to explain why these changes have occurred; it will show that, though the traditional beliefs have altered, the traditional beliefs are still speaking to the Japanese people in modern society.

Lauren Griffith - Dietetics

Mentor: Kathy Timmons

Acceptability of Blondies when Garbanzo, Great Northern, or Cannellini Beans are Substituted to Produce a Gluten Free Blondie

This experiment was designed to discover the acceptability of a gluten free blondie; four variations were done. In order to produce the gluten free blonde brownie, garbanzo, great northern, and cannellini beans were substituted for flour. The blondies were evaluated by both objective and sensory methods. The objective method included a wettability test, which was used to determine the moisture retention of each blondie variation. The higher the moisture retention, the more moist the product. The sensory method was done by a taste panel using a sensory scorecard. The four variations were given a random four-digit number to identify them, which changed at each testing to eliminate bias. Every judge evaluated each blondie variation on the characteristics of color, flavor, texture, consistency, moisture, and overall acceptability.

Devin Griggs – Political Science

Mentor: Ann Beck

Does Labor Still Labor for the Democrats?

The question of how effective labor is at getting out the vote for Democratic candidates is seldom asked in the field of political science, but essential to understanding whether or not these efforts constitute a worthwhile addition to the Democratic coalition still today. I take the position that increased turnout among members of labor unions increases the percentage of the popular vote won by Democratic candidates for president. To analyze this, I looked into previous writings on the subject, writings on how labor interacts with the Democratic Party and in the electoral arena, and exit polling. My study is largely a review of the relevant literature on the subject matter. This will inform the discipline on the vitality of organized labor in electoral politics, examine whether or not unions are effective at getting out the vote today, and help to determine how large of a role unions actually play within the Democratic voter bloc.

Michael Grissom – Political Science

Mentor: Ann Beck

Presidential Ratings Systems and Their Fallacies

Throughout the course of history, Americans have attempted to rank the holders of the office of the President of the United States with only mild success. Though history illuminates some of the criteria more clearly, many disagreements still remain on how to judge these officeholders. Today, we still lack a definitive ranking system to apply to the list of Presidents of the United States. I will be attempting to fill in these logic gaps in the current rankings systems, thus creating my own system to more clearly and successfully bring order to the tenures of these men. I will be examining the historical list of Presidents of the United States, as well as the five main presidential ratings systems that we currently have in place in today s day and age. I will then synthesize these systems and apply them in order to formulate a more complete rating system to apply to the list. Ultimately, I expect the top of the list to remain near the same, but I hope to make the middle and bottom ranked Presidents more clear and less subject to individual preferences. I believe that we will see constancy in the top and bottom ranked Presidents of the United States regardless of the rating system used, but I believe that there will be a firmer middle class so to speak of Presidents that emerge from my ratings system.

Sarah Guthrie - Nutrition

Mentor: Kathy Timmons

The Acceptability of Chia Gel as an Oil Substitute in Cake Formulations

The purpose of this experiment was to decrease the calorie and fat levels in cake and increase the health benefits while maintaining an acceptable cake. It is hoped that through partial replacement of oil with chia gel that cakes will maintain acceptable characteristics while increasing health benefits. Chia seeds are higher in omega-3s, fiber and protein as well as lower in calories and fat in comparison to oil. Three different cakes were made to evaluate the highest level of chia gel substitution while maintaining traditional characteristics. A control cake with 100 percent oil value and two variations, one with a 25 percent chia gel substitution and one with a 50 percent substitution. Cakes were evaluated for moisture content through a wettability test and for volume through a rice displacement test. Cakes were also evaluated for sensory characteristics. The results will be presented.

Ed Hall – Political Science**Mentor: Ann Beck*****Voters Influenced by the Polls***

Abortion has always been questioned among the public if it was a moral thing to do or not. Whenever voters go to polls they are asking themselves the same question; and depending upon where one votes could determine how that vote is decided. Specific polling places at churches can have an effect on the voting behavior of the voter when voting upon moral issues; such as abortion. I argue that the surroundings itself at the polling place, along with what the church teaches and believes to be a moral act can play upon the emotions of the voter; causing them to have a different opinion of voting upon the issue than what they normally would if they were voting at a different location. The data that will be used to help show that there is a relation between the polling place and how it affects the voters behavior comes from some studies that were conducted by Dr. Abraham M. Rutchick in his writing of “Dues Ex Machina: The Influence of Polling Place on Voting Behavior”. I also will be looking at the time period between 1970 and 2000, when the topic of abortion was at its peak. My findings are that individuals that vote at churches are influenced by the moral teachings and beliefs of the church. I also found that those churches that have reading pamphlets of both candidates and moral issues that are on the ballot, help to prime the church member and their voting decision. In conclusion, there is a fairly moderate relationship between the polling place and the voter, which helps to somewhat influence the decision making of moral issues; such as that of abortion.

Will Handlin – Youth and Non-Profit Leadership**Mentor: Roger Weis*****Holiday Mail for Heroes***

Holiday Mail for Heroes is done for the soldiers overseas so they could feel a sense of home during the holidays. The Red Cross is the organization that is in charge. We set up in the Curris Center around lunchtime so that we would have the best opportunity to get as many cards done as possible. When people walked by we asked them to take a few minutes to create a card, we found that people really enjoyed doing this as a small gesture of thanks for what our soldiers are doing for us. Our goal was 75 and we ended up getting 225 cards that were given to the Red Cross.

James Hobbs – Political Science**Mentor: Ann Beck*****Low Information Elections; How do Voters Make Decisions on Ballot Propositions?***

In Low information elections people may have limited information when making voting decisions. I believe that people use cues or mental shortcuts such as heuristics to make voting decisions that are similar to the decisions they would have made if they were fully informed. This paper is a synthesis of primary and secondary sources from 1996 to 2012 about how voters make their choices on ballot propositions. This research is important in helping to support classic Democratic theory. This paper finds that people do use cues for making voting decisions on ballot propositions, but these cues are just as likely to help voters make the incorrect decisions, as they are to help voters make the correct decisions.

Erica Isbell – Political Science (8-12 Certification)

Mentor: Ann Beck

All About the Money

Campaign spending in congressional races has been an issue and a cause for concern for many years. The obscene amount of money spent by incumbents and challengers on campaigns is almost unbelievable but scholars have wondered if the amount spent affects how many votes each candidate will receive. Scholars have used resources such as the Federal Election Commission to explore how much money is spent on campaigns. Factors such as intimidation with the amount of money, money influencing/deterring the way the congressman votes and what money is spent on throughout the election have been explored and could have an effect on how many votes a candidate receives. I examine the works of these scholars and look into how media and advertising play an effect in whether or not an incumbent is reelected. House members are less likely to be reelected if they outspend their challenger. This statement is one that comes with many factors and has been deemed ineffective in determining which way a citizen will vote. However, other factors have proven to affect how a citizen will vote. The amount spent on advertising and the time frame when the challenger chooses to enter a race plays a factor in how a citizen will vote.

Malcolm Jackson - Psychology

Mentor: Jana Hackathorn

It Can Wait: Outcomes and Predictors of ‘Waiting’ and Sexual Compromise

The current study investigated if sexual compromise (choosing to “wait”) is associated with relationship outcomes. These findings suggest that individuals with a restricted socio-sexual orientation, are low in anxiety, and high in avoidance are more likely to “wait”. Finally, individuals who “wait” have lower commitment and less sex related guilt.

Erica Jarvis – Criminal Justice

Mentor: Daniel Hepworth

Examining the Historical Progression of the Rights and Treatment of Persons with Disabilities

The Declaration of Independence states that “all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness.” This paper will decipher the meaning of this statement in relation to the rights of disabled persons. This paper will examine the progression of the civil rights of physically and mentally disabled persons in the United States. How persons with disabilities have been historically treated will be discussed in order to fully understand the progression from disabled persons having very few rights to having the rights that they have today. Several Supreme Court cases involving the rights of the disabled will be examined and the importance of those decisions will be discussed. The Civil Rights Act of 1964 and the Americans with Disabilities Act of 1990 are two of the main pieces of legislation that will be explained in order to understand what qualifies as a disability, what the rights of the disabled currently are and why those rights are important to a constitutional society. The Declaration states that all men are created equal, but are all men treated equally under the law?

Derrick Jent – Wildlife Biology

Mentor: Claire Fuller

Understanding what types of fungi are being distributed by P. phalangioides

Cellar Spiders, *Pholcus phalangioides*, are originally from tropical regions and are an introduced species in North America. Since they require a warm environment, they are common in homes and other buildings occupied by humans. Frequently Cellar Spiders are found dead and covered in a dense white fungus. Understanding what types of fungi are being distributed by *P. phalangioides* would give us a better idea of what human occupants are being exposed to as well. We first determined what fungi were associated with cellar spiders by plating on potato dextrose agar. Six species of fungus, including four putative pathogens, were sent to the USDA for identification. We then tested to determine whether the fungi were pathogenic to the spider. Live Cellar Spiders were collected and 6 individuals were exposed to each possible fungal pathogen. Only one fungus, *Engyodontium aranearum*, resulted in death and overgrowth of the spiders. In further tests exposure to *E. aranearum* resulted in a 100 percent mortality rate in 13 spiders compared to 12 unexposed controls in which none died. All of the deaths took place between 13 and 30 days after exposure. The outcome strongly suggests that Cellar Spiders are susceptible to this fungal pathogen which may be common in many homes considering the spiders almost world-wide distribution.

Caleb Johnson – Liberal Arts

Mentors: Barbara Cobb & Scott Byrd

Student Fee for Sustainability at Murray State

The purpose of this report is to show how a green fee would be beneficial to Murray State University, and make recommendations for best practices based upon a critical examination green fee projects at other colleges and universities. If done well, a green fee at Murray State will provide valuable learning experiences for students and faculty, long-term financial reward for the university, and secure our reputation as a forward-looking institution. Given that the university is facing a 1.9 million dollar deficit, special care will be taken to demonstrate the financial benefits of sustainability.

Alexis Jones – Political Science

Mentor: Ann Beck

The Death Penalty and its Effects on Crime

The Death Penalty and its Effects on Crime is based on data from other scholar s observations, on whether or not implementing the death penalty is an effective way to decrease crime in America. This has been an ongoing debate in the United States for years and after doing research, it is clear that the death penalty should not be abolished entirely. Studies show mixed results depending on the aspects looked at. Each study can convince you either way based on their opinions so there is a need for many outside sources. For example, by just looking at crime rates alone and comparing them to when the United States had the death penalty and when they abolished it, it is clear to see that the death penalty is effective. However, when looking at more variables (race, costs, healthcare) that make it seem like the benefits may not actually weigh out the costs of this capital punishment, thus making it ineffective. Whether or not the death penalty is effective or not is based on whose research one is examining. By comparing all the research found, the death penalty, while controlling for other variables, is not an effective punishment.

Lauren Jones - Dietetics

Mentor: Kathryn Timmons

Flaxseed as a Partial Flour Replacement in Muffins

My experiment will test the acceptability and sensory characteristics of blueberry muffins made with ground flaxseed as a partial flour replacement. The purpose of this experiment is to develop muffins that meet consumer demand for healthier baked goods. The control group will be muffins prepared without flaxseed. The experimental groups will include muffins with 33% and 50% of the flour replaced with flaxseed. A sensory panel of 5-6 people will be used to evaluate sensory characteristics. The sensory panel will sign consent forms and be asked about any possible allergies before agreeing to take part in the experiment. Objective tests will also be used to find the moisture and volume of the different groups. A wettability test will measure the moisture and a displacement test using rice will measure the volume. The purpose, methods, and results of this experiment will be presented on a poster, as well as background information.

Joseph Kitchen - Undeclared, Megan Godby - Undeclared, & Linda Swift - Undeclared

Mentor: Roger Weis

The Great American Smokeout

The Great American Smokeout is sponsored by the American Cancer Society. Murray State's Health Services sponsors the event of campus. The purpose of our project was to raise awareness of the effects of smoking. Our group conducted a carnival involving smoking related games distributing prizes to winners and other participants. 39/59 partakers voted for a smoke-free campus.

Elaine Knutson – Nutrition Dietetics

Mentor: Kathy Timmons

The Effect of Soy and Whey Protein Isolates on Homemade Cookies

The purpose of this experiment is to determine whether soy or whey protein can be put into homemade cookies while still maintaining an acceptable appearance, texture, tenderness, and flavor. Adding whey protein to commonly consumed carbohydrate foods is highly beneficial, not only does it add nutritional value to foods normally known as having “empty” calories, but it also gives people the essential amino acids they need for muscle growth, and creates the feeling of being full faster and for a longer period of time.

Tobias Landberg – Post-Doctoral Associate, Emily Clouse – Wildlife and Conservation Biology, Kathleen Mount – Biology, Howard Whiteman – Murray State University, Beatriz Willink – University of Costa Rica, & Karen Warkentin – Boston University

Mentor: Howard Whiteman

Tadpole Density Affects Jumping Performance Development During Metamorphosis in Two Arboreal Frogs

Metamorphosis is the rapid shift of an organism between niches. In amphibians, the transition between phenotypes adapted for aquatic larval and terrestrial adult environments is awkward and dangerous. Metamorphs are not well-adapted to life either in water or on land and therefore vulnerable to predation. In two separate outdoor mesocosm experiments in Panama and Kentucky we raised larval Red-Eyed treefrogs (RE; *Agalychnis callidryas*; n=344) and Cope's Grey tree frogs (CG; *Hyla chrysocelis*; n=176) under high, medium and low density conditions. To measure the carry-over effects of the larval stage on the development of jumping performance, each individual was placed at the center of a jumping arena marked with concentric circles (1.25cm and 1cm apart for RE and CG respectively) and digitally stimulated to jump. We analyzed the average of three jumps per individual and also measured snout-vent, limb (tibiafibula), and tail lengths, mass, and stage of metamorphosis (Gosner stages). When analyzed separately using ANCOVA, both species showed similarly strong positive effects of snout-vent length and limb length on jumping performance and strong negative effects of tail length. Both species also showed snout-vent length by mass interactions and effects of density that interacted with morphological traits such as tail and limb length. Clear species effects are also apparent. While limited in scope, this simple two-species comparison reveals that during metamorphosis there is a highly dynamic relationship between body size metrics and jumping performance that is modified by the larval environment.

Madison Lane – Spanish Education

Mentor: Susan Drake

Esperanza contra destino: represión de sueños por el machismo in El Sueño de América

The concept of machismo is relatively new; however, its roots stem from a long Latin American history. In the book, *El sueño de America*, Esmeralda Santiago explores various aspects of machismo. Although it has a primarily negative mainstream connotation, the author explores both the negative and positive characteristics, primarily through the relationship between America and Correa. Not only does the author draw the reader in through an omniscient narrator, but she also uses graphic details and symbolism. Some of the various aspects addressed will be domestic violence, labor discrepancies, and gender role stereotypes. Furthermore, *El sueño de America* uses other characters as support for additional issues related to machismo such as ageism and familial roles, with a special emphasis in the discrepancies between Latin American and United States cultures.

Andrew Leonard – Political Science

Mentor: Ann Beck

The Power of the Celebrity Endorser

In a society which is focused on the media, the subject of celebrity endorsements needs to be discussed. I will synthesize and analyze research that has already been done on the topic. It will focus on presidential political endorsements from the 2000 election onward (including primaries), and the effects it has on voter turnout as well as how these celebrity endorsements have trended to benefit the Democratic Party in terms of support (funds, activities, and surrogates) more than the other political parties. Celebrity endorsements help benefit presidential candidates by increasing their votes in the following areas; voter turnout, effect on new voters, and in the aspect of political funding. There is a slight boost in votes after a celebrity endorses a candidate; however it is usually only the voter turnout that is increased in the favor of that candidate rather than the other benefits. It can be concluded that there is much left to be studied because of the lack of experimentation in the field. I suggest a new experiment that can help further knowledge in this field. The parameters of which will be explained in this paper further.

Guinevere Lewis – Liberal Arts

Mentors: Barbara Cobb, Scott Byrd, & William Schell

A History of Earth Day

On April 22, 1970 celebrations all across the country marked the first Earth Day, which many see as the beginning of the modern environmental movement. Gaylord Nelson, who was a senator from Wisconsin at the time, came up with the idea of Earth Day to inspire a public demonstration so big it would shake the political establishment out of its lethargy and force the environmental issue onto the national political agenda. Earth Day celebrations were successful in bringing the issue of the environment into the forefront. As seen in the Clean Air Act, the National Environmental Protection Act were passed, and the National Environmental Policy Act soon after the first Earth Day. The following pages examine what led to the first Earth Day and the impact it had on the public's view of environmental issues and how it shaped the government's response.

Benjamin Linzy – History and Criminal Justice

Mentors: David Pizzo & Paul Lucko

Mussolini's Shadow War: The Struggle Against Organized Crime in Fascist Italy

As a dual criminal justice and history major, I constantly seek to deepen my understanding of historical events by looking at them through the lens of criminal justice. In doing so, I am often able to garner a deeper understanding of the past as well as contemporary criminal justice issues. The recent controversy related to the National Defense Authorization Act and its provision that grants the authority for the Armed Forces of the United States to detain covered persons (as defined in subsection (b)) pending disposition under the law of war is not the first controversial measure a nation has implemented in the name of national security. What impact these measures have on a nation's population and whether they actually achieve their intended goals was worth consideration. To evaluate this, I decided to research the methods used by another nation to protect itself from dangerous internal elements, as well as, what effect these methods had on the citizenry. I chose to analyze Benito Mussolini's Italy and its combat against organized crime in order to illuminate the issue.

Dana Luker – Spanish Education

Mentors: Leon Bodevin & Martin Jacobs

Santo: defendedor de los desamparados, los d biles y los sordos

Lucha libre began with the indigenous tribes and remains part of the Hispanic culture today. Santo is a luchador and a hero who possesses several special skills in order to entertain and protect the people. The focus of the two Hispanic films, *Santo en la frontera del terror* and *Santo contra los zombies*, presents a similar theme, good versus evil. In this case, Santo has every intention to protect the people from anything or anyone who may disrupt the peace. Along with protecting the people Santo fights for *lucha libre*, in which he provides entertainment for the people. There are different aspects of *lucha libre* that connect with these two films. The *tecnicos* (good) are known to follow the rules and have a fair fight, in the wrestling ring and in real life. The *rudos* (evil) are known for breaking the rules and fight dirty and because of this, the *tecnicos* are forced to break the rules in order for victory. The two films contain similarities that explain the role of Santo and the idea of *lucha libre*.

Jennifer Marks – Political Science

Mentor: Ann Beck

The Effect of the Relationship Between President and Congress on Passing Legislation in the Twentieth Century

When wanting to have some piece of important legislation passed, we must first consider the type of relationship the Executive has with the legislative branch. This is due to the relationship between the President and Congress having a direct effect on the amount of legislation the President is able to have passed and the amount of vetoes used. When looking at the use of the veto since the beginning of the presidency, the numbers weren't really significant until the twentieth century. Because of this, I will focus only on the presidents of the twentieth century to direct my research. I have chosen to use only the five presidents that used the veto power the most and the five who used it the least. I will study each of these presidents' relationship with congress, based on their approval ratings in congress, the behaviors shared between them and congress, and the use of the veto by the President. Comparing the relationships between these variables will help me determine whether there is a relationship or not. In doing so, I will prove that there is a direct effect caused by the President's relationship with congress in regards to the amount of Presidential legislation passed and the number of vetoes used.

Jennifer Martin - Geoscience

Mentor: Robin Zhang

Change Detection Techniques for Long-term Monitoring of the Surface Mining Region of Eastern Kentucky

Surface mining has many environmental consequences, including changes to local landscapes, alteration of stream reaches beyond the immediate mining location, and disruptions to contiguous forests beyond the active period of the mining operation. This research identifies the most efficient and accurate method of detecting and quantifying these changes in the surface mining region of eastern Kentucky. Landsat images from 1984 and 2011 of the mining region near Hazard, KY are used in this analysis. Three multi-temporal change detection techniques are compared and evaluated for accuracy and ease of use. First, the Normalized Differencing Vegetation Index (NDVI) was calculated for each image. Image algebra was performed on each NDVI images to produce a single image which was mapped using threshold techniques. Second, post-classification comparison was used to identify the changes from the 1984 image to the 2011 image. This method allowed “from-to” analysis and was used to identify the most effected landcover class. Third, Principal Component Analysis was applied to a combined image of 12 bands. The first three principal components were classified to identify changes. Accuracy assessments and the benefits and limitations of each method are discussed with regard to long-term monitoring of the surface mining region of eastern Kentucky.

Jennifer Martin - Geoscience

Mentor: Robin Zhang

Flood Inundation Mapping in the Clarks River National Wildlife Refuge Using Lidar-derived Elevation Models

The Clarks River National Wildlife Refuge, located solely in Kentucky, is comprised of over 8,000 acres and is primarily a bottom-land hardwood forest that is home to over 200 species of migratory birds. The reclamation of agriculture land and bottomland forests has allowed the floodplain to reestablish its natural extent since the refuge was established in 1997. To encourage the development of migratory bird habitat in the reestablished floodplain, an existing levee in the Clarks River National Wildlife Refuge will be raised to promote flooding in the immediate area. A LIDAR-based elevation model was used to identify flood inundation extents for the proposed levee heights, ranging from a one foot increase to a ten foot increase. Flood inundation areas were mapped and areas that extend beyond the refuge boundary identified. The depth of flooding was also calculated for the identified extents. This research provides a more accurate assessment of flood-inundation zones and will guide restoration efforts currently being proposed in the refuge.

Timothy Martin – Geo-Archeology, Janene Johnston – Geo-Archeology, Matthew Boling – Geo-Archeology, & Alessandra Daniel – Geo-Archeology

Mentor: Lara Homsey

Archaeological Assessment of the 15Tr477 site near Canton, KY

During the fall of 2012, Murray State University's Public Archaeology Class (ARC 350) conducted additional Phase I archaeological testing of the 15Tr477 site near Canton, KY, in Trigg County. This survey was performed on behalf of the United States Army Corps of Engineers (USACE) based on recommendations by New South Associates, the cultural resource management firm who identified the site in 2010. At 15Tr477 site two historic coffins are known to have eroded out of the cut-bank along the site's northwestern edge. Therefore, New South recommended that USACE conduct further work to determine if additional graves are present. The objectives of this additional work were to 1.) determine if additional burials were present 2.) if any additional burials are at risk of eroding out and therefore require reburial and/or stabilization (i.e., rip-rap) of the cut-bank.

Carlton Matthews – Political Science and History

Mentor: Ann Beck

Non-Constituent Influence: Do Certain Interest Groups Have a Dominating Influence in the U.S. Senate Today?

In the wake of the Supreme Court's decision on Citizens United, more attention has been given to outside influence on legislators. Interest groups spend billions on lobbying their specific issues, and some lawmakers are known to depend on these groups for election funding, information, and decision-making. This study examines how much influences are exerted on U.S. Senators in recent time. The method of the study is examining research of the scholars in the field, who explore the topic in the last decade. I'm going to use the following dimensions to compare and contrast these scholarly works: variables used, quality of the variables, primary method used, and the extent of their findings. From researching these works, I conclude that certain interests groups have a dominating influence in the the U.S. Senate today.

Haley McCuiston – Spanish/Teacher Certification

Mentors: Leon Bodevin & Janice Morgan

María, Full of Grace: Analyzing Cinematographic Aspects

Colombian drug trafficking has made a major impact on the United States; therefore, director Joshua Marston created *María, Full of Grace*, to depict the life and journey of María as a drug mule, in which María considers an easy escape from her needy family, overbearing boyfriend and strenuous factory work. Throughout this film, Marston reveals part of the Colombian culture through the characterization of various characters and the syntax amongst these characters. Likewise, Marston uses cinematic techniques such as juxtaposition of roses to reveal that María can never completely escape from her past, and the juxtaposition of the drug capsules to portray the great obstacle María must overcome to become a successful drug mule. In conclusion, this fictional film represents the various struggles one faces: being incarcerated, becoming sick and dying, throughout María's adventure as drug mule.

Jason Merrick - Geoscience

Mentor: Haluk Cetin

Change Detection of Florida Mangroves at the Northern Limit of Their Habitat

The importance of the coastal zones of the world in terms of environmental and economic impact is indisputable. These areas serve as intricate habitat and support a rich, diverse ecosystem. Mangroves are a vital part of many of these coastal regions. The vegetation making up the mangrove areas are varied and are crucial for their maintenance. These plants can also serve an indicator for the health of the entire area. Remote sensing can be an important tool to monitor the mangrove coasts. In this study, Landsat imagery from several time frames of the northernmost mangrove area in the United States, Cedar Key, Florida, was obtained. These images were inspected and analyzed for patterns and compared to known events that may have affected the area, such as storms. An unsupervised classification was conducted to determine and measure the land cover for the study area. A change detection technique was used to measure the spread and decline of the mangrove species in the study area. The results of the change detection yielded evidence as to the health and relative expansion or contraction of mangrove species in the area and an attempt was made to identify correlations to conditions that may be related, such as freezes, storms, or sea level rise if any exist.

Jared Militello - Biology

Mentor: Michael Flinn

Spatiotemporal Movement and Habitat Use of Re-introduced Juvenile Alligator Gar, *Atractosteus spatula*, in Clarks River, Kentucky

Alligator Gar (*Atractosteus spatula*) populations have been threatened or extirpated throughout most of the Lower Mississippi River valley. The Kentucky Department of Fish and Wildlife Resources (KDFWR) have made the commitment to restore alligator gar in their native waters within the Commonwealth. In October 2010, 20 juvenile alligator gar (age-0, ~20-25 inches long) were surgically implanted with acoustic telemetry tags and stocked in the Clarks River in Kentucky. After 1 year of tracking, linear kernel density estimates of home ranges has shown that the overall 50% utilization distribution (i.e. core range) is 4.65 km, but seasonal core ranges vary from 1.09 km in the winter to 4.75 km in the spring. Spatial distribution seemed heavily influenced by home range selection, as most fish maintained position near a core range, occasionally departing with seasonal and environmental changes. This point is emphasized when quantifying distances moved between two consecutive relocations (i.e. displacement), as nearly 70% of all movements were 2,000 m or less. Average net movement rates are approximately zero for every month except for the stocking month, indicating that juvenile alligator gar may exhibit strong site fidelity, especially given the conditions in a river setting. Initial analysis of habitat transects, randomly sampled throughout the river, show that fish distribution in the upper river is driven by variables such as submerged course woody debris and forest cover intensity, while in the lower river distribution is high correlated with metrics such as bank slope and cross sectional area of the channel.

Ruqayyah Nasser Moafa – Teaching English as a Second Language

Mentor: Sue Sroda

Vocabulary Learning Strategies

The findings of this project are expected to raise students and teachers awareness on the use of the most effective learning strategies especially on vocabulary, and this will also eventually effectively enhance students language learning, and improve their language skills. Moreover, it is expected that this project will help them to know some vocabulary learning strategies which eventually can be addressed to ease the students in mastering the vocabulary. Additionally, it will help them to know whether there is a significant difference in vocabulary learning strategies in relation with learners' ages, gender, and level of proficiency. It is also showing the most frequent strategies used by ESL students in relation with gender differences, age, nationality and level of proficiency. This project involves about 30 participants from both male and female, different ages, level of language proficiency and nationalities for the survey and about four people for the interview. The participants are international students who are studying in a small university in western of Kentucky. This project investigates four research questions: 1. What are the most effective learning strategies do ESL students use to improve their vocabulary? 2. Is there any significant difference in the uses of vocabulary learning strategies in term of gender differences, age, nationality and level of proficiency? 3. What are the most frequent strategies used by ESL students in relation with gender differences, age, nationality and level of proficiency? 4. Are there any differences in the use of VLS among ESL students in relation to attitude toward VL?

Michael Moore – Watershed Studies

Mentor: Howard Whiteman

Mother Knows Best: Investigating the Role of Maternal Effects on Amphibian Life Histories

Maternal effects form a flexible linkage between maternal and offspring environments. In amphibians, maternal effects such as embryo size are known to have strong context dependent larval fitness consequences, however relatively little is known about their influence on adult life history variation. We investigated how experimentally manipulated embryo size differences regulated larval growth and phenotype production in mole salamanders. We predicted that larger embryos would direct larvae towards rapid growth and metamorphosis under stressful conditions, while smaller embryos would direct larvae towards slower growth and failure to metamorphose under stressful conditions. Individuals were reared at one of three conspecific densities in experimental ponds by embryonic treatment (control versus ~20% embryonic yolk reduction). Larvae from each tank were captured throughout the 2012 season to assess growth rates, and tanks were emptied in mid-November at which point adult phenotypes were recorded. Reduced treatment animals were significantly smaller at hatching, but demonstrated no size difference after 30 days. After 105 days, larval growth exhibited negative density dependence with context dependent effects of embryonic treatment, where reduced larvae were smaller at low densities but the same size at high densities when compared to control larvae. The reduced treatment produced more metamorphs at high densities than the control treatment. These findings are a strong example of the context dependent fitness consequences of maternal effects.

Md. Niaz Morshed - Geoscience

Mentor: Robin Zhang

Consequence of Sea Level Rise to a Delta Country, Bangladesh

Coastlines are constantly changing due to both natural and anthropogenic forces. Climate changes and associated sea level rise will continue to reshape coasts in the future. The issue of shoreline changes due to sea level rise has increasingly become a major social, economic and environmental concern to a large number of countries along the coast like a delta country, Bangladesh. This delta is formed by the confluence of the Ganges (local name Padma), Brahmaputra (local name Jamuna), and Meghna rivers and their respective tributaries. The coastal area of Bangladesh occupies over 36,000km² of land. Most of the region of Bangladesh is well within the Low Elevation Coastal Zone (LECZ) of 10 meters or less. Ali (1996) and Kintisch (2009) has estimated that, roughly half of the nation will be flooded if sea level rises were to reach a meter. The delta of the Ganges-Brahmaputra-Meghna river system affects roughly one third of the nation's land area and 70% of the population. Fine spatial resolution remotely sensed imagery has considerable potential for mapping a shoreline. Raster analysis on the Global Digital Elevation Model (GDEM) derived from Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) data provided substantial results on the entire coastal area of Bangladesh. This study aims to portray the consequence of sea level rise to the different Land use and Land Cover on a local scale. Results drawn from this research will help the decision makers and planners to rethink about the safety and rehabilitation of this large population.

Md. Niaz Morshed - Geoscience

Mentor: Robin Zhang

Modeling of the Effect of Sea Level Rise in the Coastal Region of Bangladesh

The shoreline is rapidly changing due to both natural and anthropogenic forces. Climate change and associated sea level rise will continue to reshape coasts in the future. Bangladesh is located in the low-lying Ganges Delta. This delta is formed by the confluence of the Ganges (local name Padma), Brahmaputra (local name Jamuna), and Meghna rivers and their respective tributaries. The coastal area of Bangladesh occupies over 36,000km² of land. As a delta country, most of Bangladesh is well within the Low Elevation Coastal Zone (LECZ) of 10 meters or less. Ali (1996) and Kintisch (2009) has estimated that, roughly half the nation would be flooded if sea level rises were to reach a meter. The delta of the Ganges-Brahmaputra-Meghna river system affects roughly one third of the nation's land area and 70% of the population. Fine spatial resolution remotely sensed imagery has considerable potential for mapping a shoreline. Raster analysis on the Global Digital Elevation Model (GDEM) derived from Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) data provided substantial results on the entire coastal area of Bangladesh. This study models the impact of sea level rise on farmland, settlements, and infrastructure in Bangladesh, applying a few sea level rise scenarios. Results drawn from this research will help the decision makers and planners to rethink about the safety and rehabilitation of this large population.

Jason Mott – Political Science

Mentor: Ann Beck

Gun Curriculum in Schools

Over the past 20 years gun violence in America has remained at a disproportionately high rate despite the implementation of numerous gun control laws. The focus of gun laws has been upon the possession of and types of guns with no attention given to the education of the target group committing gun violence. This paper will examine gun violence trends, gun violence demographics, media, and education programs. Data will be derived from the Department of Justice, Bureau of Prisons, Federal Bureau of Investigations, Centers for Disease Control, and the U.S. Department of Education. Additional analysis will incorporate congressional testimony, gun legislation, scholarly works, and relevant education regulations. Secondary sources will consist of news reports, and commentary from various education professionals. The hypothesis is that mandating nation-wide gun violence awareness, and gun safety curriculum in schools will reduce gun violence in America. The analysis will demonstrate that the majority of gun violence occurs in low income, highly populated urban areas which have the most restrictive gun laws in the country. The target group committing the majority of gun violence consists of male minorities, from the ages of 12-35 who are associated with gangs and or drugs. The findings will show that no gun laws focus upon gun violence avoidance education in America's schools or for the general population. The major conclusion of this paper will determine that gun violence in America may be significantly reduced through implementation of standardized gun violence avoidance, and gun safety curriculum in schools.

Jennifer Muth – Liberal Arts

Mentor: Barbara Cobb

A Correlation between Traumatic Brain Injury and Crime

My work will incorporate my two concentrations in my major: Biology and Criminal Justice. My chosen topic is examining and correlating traumatic brain injury (TBI) and crime. The purpose of this research is to illustrate how brain injuries could lead to criminal behavior and crime. Linking brain injuries and crime has received recent attention, which makes for a relevant project. This is a significant topic because crime occurs everywhere in the world and everyone has some type of experience with it. Although crime will not disappear, understanding it as well as criminal behavior can lead to discovering ways to handle and prevent crime.

Kelsey Nance – Nutrition, Dietetics, & Food Management

Mentor: Kathy Timmons

Evaluation of Brownies Using Less Sugar and Sugar Substitutes

The purpose of this experiment is to determine the color, texture, moisture, flavor, and overall acceptability of brownies prepared with less sugar or a sugar substitute. The reason for this experiment is to make a brownie that tastes as good with half the sugar than that of a real brownie.

Riley Nance – Elementary Education

Mentor: Lynn Patterson

Environmental Influences on Children's School Behavior

A common myth among teachers is that students “act out” or participate in “off-task” behaviors much more frequently during a full moon. Teachers believe and insist that students are reckless, moody, less focused, and disruptive during the dreaded “full moon” phase. Although there has been research completed on the effects of the moon’s cycle upon behavior patterns, that research has been psychology based rather than education based. This psychology based research dispels this “moon myth”. The purpose of our project was to complete research in an educational setting and make this information known in the educational world. The purpose of our research was to prove that there is no correlation between moon cycles and students “off-task” behaviors. We theorized that teachers automatically assume and blame their students “off-task” and “acting out” is a result of the full moon. We want to provide proof for teachers that perhaps it is not the student’s fault that the days surrounding a full moon are stressful for them, but maybe it is the teacher’s preconceived notion.

Kelcy Navrkal – Youth and Non-Profit Leadership, Jarrett Tole – Youth and Non-Profit Leadership, Sara Martinez – Exercise Science/Wellness, & Hannah Swinney – Youth and Non-Profit Leadership

Mentor: Roger Weis

Fitness and Self Esteem Day

This presentation will promote the "Fitness and Self Esteem Day" that was held on November 17th, 2012 through the Main Street Youth Center and students of YNL 350. This fun-filled day was held at the Family Fitness Center here in Murray and was open to all children of the ages 7-13. Our goal was to promote a healthier lifestyle, both physically and emotionally. We participated in various fitness activities, provided a free lunch and two guest speakers came to the center to talk to the kids about nutrition. The kids had a fun time and overall the day was a success.

Gina Nuzzo – Youth and Non-Profit Leadership, Ronald Pavlik – Youth and Non-Profit Leadership, & Adam Taylor – Integrated Studies

Mentor: Roger Weis

Athletic Day/Night

Our group was comprised of 3 athletes a golfer, football player, and tennis player. We decided since we are all athletes we would have an athletic day/night at hickory woods. The athletic day consisted of playing different sports, and the athletic night consisted of all the residents meeting one of the starting basketball players and talking with him.

Ross Paschall – Engineering Graphics & Design, Emily Shipley – Engineering Graphics & Design, & Spencer Gooch – Engineering Graphics & Design
Mentor: Emre Bahadır

Indoor Energy Harvesting System

In our proposal we're suggesting designing a system that will bolt on to any type of bike you can pedal. It will generate power from the bike, using an alternator, to a small battery to hold your left over electricity. From there, wires will move the energy in the form of electricity to the device that needs charging. By building a universal stand, which will allow any size bike to be attached, any person who can climb onto a bike can use this system. After putting the bike onto the stand, and climbing on board, user will start to pedal and spin a wheel on a generator. While this alternator spins it creates electricity that will be transmitted to a 12 volt battery that will store the energy that is being made. From the battery the power will be moved to a power inverter that will change the current of the electricity from DC to AC. On the front of the power inverter there will be an outlet that will be the hook up point for the charger of the device. If the phone or laptop is full of energy and doesn't need charging, person can still exercise and the energy that is made will simply be stored into the 12 volt battery for a later time. The goal of this project is to develop a new indoor energy harvesting system. By doing so, the feasibility and the potential benefits of the suggested system will be tested and analyzed.

Sam Pellock – Chemistry/Biochemistry & Andrew Thompson - Mathematics
Mentors: Kate He & Chris Mecklin

Testing Darwin's Naturalization Hypothesis Using Generalized Linear Models

Naturalization is the introduction and establishment of an exotic or nonnative species in a new environment. Darwin's naturalization hypothesis states that if a nonnative plant species is introduced into an environment with few native congeners, the nonnative species will have a greater chance of becoming naturalized. To test this hypothesis, we compiled a Kentucky plant database consisting of 821 species and subsequently selected various plant traits to determine the effect these traits had on the probability of successful naturalization. The database was analyzed using generalized linear models in the statistical program R. Results of these analyses showed that native congeners had a negligible effect on the probability of plant's naturalization. However, the native model suggested that the greater the number of native congeners the more likely a species would be native, thus supporting the idea of empty niches. Additional analyses showed that flower type and abundance are significant predictors of the likelihood of naturalization. In particular, it was seen that less abundant plants had a more difficult time naturalizing. It was also found that species were more likely to be invasive if their native origin was Europe or Asia.

Scot Peterson – Watershed Science

Mentor: Howard Whiteman

Using Benthic Macroinvertebrate Recolonization to Gauge Stream Community Response to Potential Disturbance Caused by Restoration

Restoration projects in anthropogenically dominated landscapes have greatly increased over the past decade. In the case of streams, improvement of in-stream habitat potentially disturbs an already impacted system by physically altering the stream bed, yet our understanding of the ability of the biotic community to recover after these perturbations is lacking. We assessed modes of benthic macroinvertebrate recolonization at two sites of varying degradation in an agriculturally impacted 3rd order stream in western Colorado, USA, in order to gauge community recovery from restoration-related disturbance. Using recolonization traps, each open to particular modes of colonization (upstream, downstream, aerial, hyporheic, and control), we compared overall abundance, biomass, diversity, and functional group composition to determine differences between recolonization routes among sites. Upstream traps at the low impact site had nearly twice the total abundance as controls, but biomass, trap richness and Shannon diversity varied little between traps and sites. Differences in community composition were detected using Non-metric Multidimensional Scaling (NMDS) analysis. Functional feeding group composition in control traps was similar between sites. However, grazers dominated abundance and biomass in all traps at the high impact site, while more functionally diverse communities colonized traps at the low impact site. Our results indicate that macroinvertebrate communities have the ability recolonize quickly with dispersal from upstream sources having the greatest influence on community composition. Additionally, the changes in functional feeding groups suggest that recolonization may be driven by available resources.

Grace Porter – Watershed Science

Mentor: Paul Gagnon

The Effects of Levee Building on Tree Growth and Soil in a Bottomland Hardwood Forest

My research will study the effects of levee building on primary productivity in terms of tree growth, as well as the levee-building effects on wetland soil parameters. I will use dendroecology, the study of tree rings to construct the ecological history of a forest, to investigate productivity on either side of a levee constructed in 1969 in order to control hydrology for agriculture. This technique allows collection of long-term data, and will offer insights into growth patterns both before and after levee construction. I will also analyze soil samples on either side of the levee to study the changes in important parameters of wetland soil, including relative soil particle proportions, pH, and soil organic matter. The study site for this project is in northeastern Louisiana along the Ouachita River, a Mississippi River tributary. The land is part of the Upper Ouachita National Wildlife Refuge and at twenty-five square miles is the largest current bottomland hardwood forest restoration project in the US.

Olivia Raffli - Psychology**Mentor: Paula Waddill*****Sibling Relationships and Personality Traits***

This study examined the relationship between number of siblings an individual grew up with and personality; more specifically, extraversion and intelligence. Participants consisted of Murray State University undergraduate students whose ages ranged from 18 to 32. The purpose was to determine if there was a correlation between the number of siblings in a household and participants' level of extraversion and intellect; particularly, if there were any differences in personality trait scores between only children and those who grew up with siblings. A demographic survey created by the researcher was used along with two questionnaires obtained from the International Personality Item Pool as methods of measurement between variables. No significant correlation was found between number of siblings and personality, however, it would be relevant to conduct follow up research to explore the dynamic relationships among siblings and also consider parent and child relationships. Although results from this study did not support what was predicted, previous research indicates that correlations have been found between having siblings or not having siblings and personality differences between both groups.

Judy Ratliff - French**Mentor: Janice Morgan*****The Hell of the Subconscious***

Dante Alighieri's *Inferno*, Jean-Paul Sartre's *No Exit* and Samuel Beckett's *End Game* demonstrate an existential vision of human existence where each person made informed choices in their lives for which they must now deal with the consequences. Existentialists see human existence as unexplainable; that each individual has the freedom to choose what he or she does and has the responsibility for the consequences of their choices and actions. Sartre admired Sigmund Freud yet he challenged the Freudian ideas of the subconscious. Sartre considered the subconscious to be a type of personal hell. Each character in the works presented in this talk is in a hell of their own making; one that they created with each choice they made throughout life.

Zachary K. Reeder - Chemistry**Mentor: Kevin M. Miller*****Synthesis and Thermal Stability of Imidazolium-Containing Polyurethanes***

The interest in charge-containing polymers, commonly referred to as ionenes, has increased significantly due to their potential application in areas such as electroactive devices and membrane separation science. Here, we report on the synthesis and thermal stabilities of several imidazolium-containing thermoplastic polyurethanes. In preparing the imidazolium-containing diols, three key structural variations were explored as part of a preliminary structure-activity study: (1) Concentration of charge: how does an increase in charge density (mono vs. bisimidazolium) effect thermal properties? (2) Counteranion choice: how does the ion affinity (basicity) of the counteranion effect thermal stability? (3) NCO:OH ratio: how does hard segment concentration effect the glass transition temperature and thermal stability?

Carlynn Rekosh – Wildlife Biology

Mentor: Terry Derting

Absence of *S. neurona* in Virginia o possums (*Didelphis virginiana*) in Calloway County

Equine Protozoal Myeloencephalitis (EPM) is the most commonly diagnosed neurological disease in horses, and can be fatal. The causative agent of this disease is the protozoan parasite *Sarcocystis neurona*. A common definitive host is the Virginia o possum (*Didelphis virginiana*) which sheds the parasite's oocysts in its feces. If a horse eats material that has been near o possum feces, the horse risks ingesting these oocysts and developing EPM. The protozoan has been previously confirmed in western Kentucky, and is of potential concern to local horse owners. I hypothesized that *S. neurona* is present in the Calloway County area due to the abundance of *D. virginiana* throughout the county and western Kentucky. To test my hypothesis, fecal samples were obtained from 13 o possums. The county was divided into ten transects and I obtained permission from various landowners to set traps on their properties. The animals were captured using live traps and held until a fecal sample was expelled. A fecal floatation method was used to release parasite oocysts from the samples, and the oocysts were examined under a microscope. On average, each sample had four different types of parasites. The protozoan *S. neurona* was not detected in any of the samples, so my hypothesis was not supported. There was no statistically significant difference in parasite occurrence between males and females or between juveniles and adults. I tentatively concluded that *S. neurona* is not widespread in Calloway County; however, more samples would be necessary to confirm my conclusion.

Sijin Ren - Chemistry

Mentor: Wafaa M. Fawzy

Intermolecular Interactions Between Each of Uracil and Adenine with Reactive Oxygen Species

This work concerns computational study of intermolecular interactions of each of the uracil and the adenine molecules with the superoxide anion and the hydroxyl radicals. Calculations were performed using the density functional (DFT/B3LYP) level of theory with the aug-cc-pVnZ basis set, $n = 2$ and 3 . It was found that the superoxide and the hydroxyl radicals interact with a specific hydrogen atom in uracil. Similar studies for adenine identified different minimum energy structures for the adenine-superoxide anion and the adenine-hydroxyl radical complexes. This suggests that the interactions of each of the superoxide anion and the hydroxyl radical with adenine are not as selective as their interactions with uracil. Results of calculations for molecular structures, intermolecular, and intramolecular interactions revealed interesting mechanisms for proton and hydrogen transfer processes.

Thomas Reynolds - Agribusiness

Mentor: Gustav Helmers

Impact of the 2008 Farm Bill on American Agriculture

The 2008 Farm Bill established the direction that the United States was going in terms of agricultural policy. The Farm Bill is important to many groups of people in the US, including farmers, ranchers, agricultural scientists, and people eligible for the TARP program. With the broad range of things the Farm Bill addresses and the amount of money the bill uses (\$288 billion), it is a very important piece of legislation. However, when the 2008 Farm Bill expired in 2012, a new Farm Bill had not been passed, as Congress was busy with other, more pressing, matters in lieu of the so-called fiscal cliff. To avoid increases in the price of some agricultural goods, Congress extended the 2008 Farm Bill one year. The extension of the Farm Bill undoubtedly will affect American agriculture. In my thesis, I will analyze these effects on agriculture. I will focus specifically on five titles of the 2008 Farm Bill: Commodity Programs, Credit, Rural Development, Crop Insurance and Disaster Assistance Programs, and Commodity Futures. I will examine the history of each of these areas as they pertain to American agricultural policy, examples of past and current programs in these areas, the cost and impact of these programs, and the future of programs in these areas based on 2012 Farm Bill propositions.

Bradley Richardson - Fisheries/Aquatic Biology

Mentor: Michael Flinn

A Search for Species Identifiers Between Alligator Gar, Longnose Gar, Shortnose Gar, and Spotted Gar Using Morphological Metrics

Recently, increased efforts to reintroduce the Alligator Gar (*Atractosteus spatula*) have occurred in several areas of its historic home range which encompasses most of the lower watershed of the Mississippi River. In areas where these reintroductions have occurred, the opportunity to examine interactions between four sympatric gar species (Alligator Gar (*A. spatula*)), Longnose Gar (*Lepisosteus osseus*), Shortnose Gar (*L. platostomus*), and Spotted Gar (*L. oculatus*)) inhabiting the region exists. While the four species can be identified fairly easy as adults, based on size, coloration, and body morphology; there are challenges in distinguishing juvenile Alligator Gar from Shortnose Gar. Field measurements were used to search for morphological differences that could be used for rapid species differentiation across all size- and age-classes of gar. Yielded results showed that the ratios of Head Width (HW) to Eye Width (EW) and Snout Length (SnL) to Operculum Length (OL) provide the most consistent modes of species identification. Alligator Gar displayed the largest HW to EW ratio (4.28:1) compared to Shortnose Gar (2.80:1), Longnose Gar (3.09:1), and Spotted Gar (3.37:1). Alligator Gar also displayed the largest SnL:OL ratio at 4.27:1; while Shortnose, Longnose, and Spotted Gar express ratios of 3.67:1, 5.88:1, and 3.69:1, respectively.

Veda Riley – Secondary English Education

Mentor: Staci Stone

"Such a pretty charade": The Puzzle of Jane's Austen's Emma

While Jane Austen's *Emma* (1816) is often analyzed for its views on class, love, and marriage, little has been said regarding the structure of the novel. What appears to be a mere romance is in actuality a detective story. Through her wordplay and diction in *Emma*, Austen leaves the reader multiple clues which can be used not only to solve the matchmaking puzzle, but also to discern the true nature of characters, such as Harriet Smith, Mr. Elton, Frank Churchill, and even Emma herself. It is this level of attention to detail that classifies Austen as a master of her craft.

Hannah Robbins - Agronomy

Mentor: Iin Handayani

Soil Organic Matter and Aggregation in Relation to Agricultural Systems

Better understanding the soil's response to different land management practices will determine ways to increase the productivity of a soil system. As important indicators of soil quality, organic matter and aggregation control the stability of the soil associated with permeability and resistance to erosion. The objective of this study was to observe the differences in soil organic carbon, macro-aggregates and micro-aggregates and the ratio of macro-aggregates to micro-aggregates in three common agricultural systems of silt loam soils throughout western Kentucky. The sites used for this study vary from Meade, Christian, Graves, Marshall, Hickman, Hopkins, Ballard, and Calloway counties. There are a range of management practices throughout these counties, such as monoculture corn, corn-soybean production, and tobacco production (crop fields), pasture and hayfield (forage fields) and woods and forest land (woods). The dominant soil series of these areas were Grenada silt loam and Vicksburg silt loam. This study suggests that various agricultural systems have different effects on soil organic C (SOC) content and aggregation and that a measurable quantitative difference between the systems can be observed. The highest SOC was found in the wooded areas and forage fields (20-35 g/kg). Crop fields had the lowest amount of SOC in both depths (18-21 g/kg). Wooded areas and forage fields had the most desirable aggregation as indicated by the highest macro-aggregate percentage and the ratio of macro-aggregates to micro-aggregates. This data can assist a land owner in educated decision to help provide usable land for future generations.

Kristen Rogers – Marketing, Erin Behbehani - Marketing, Celeste Chockley -

Marketing, Ella Garnett - Marketing, & Cord Koch - Marketing

Mentor: Stefan Linnhoff

MSU Career Services - Student Quality Perceptions and Possible Improvements

This research project aims to discover the degree of student awareness regarding the MSU Career Services department and to find ways of increasing awareness of this office as well as the value of its services. Furthermore, this project endeavors to examine student perceptions of co-ops/internships and evaluate the influence of these co-ops/internships in relation to future employment opportunities.

Travis Rupprecht - Political Science, International Affairs, and American Government

Mentor: Ann Beck

The Tea Party and the 2010 Midterm Election

In this paper I studied the midterm election of 2010, but specifically the Tea Party candidates. I wanted to see if they had an impact on the election by seeing if they won more than 50% of their overall races, I also wanted to see if they increased their margin of victory of voting percentage compared to the districts' previous election. I focused specifically on the 2010 election and compared the Tea Party's results to the rest of the U.S. House and U.S. Senate races. I found that in the U.S. House the Tea Party won roughly 30% of their races in the general but in the Senate they won over 50%. The Tea Party had an impact on the election of 2010 in primarily the Senate but was not as effective in the House of Representatives. It is important to study third parties impact on the election to see if they are a movement or just noise. The Tea Party should be studied more in depth as it has energized different party of the GOP's base.

Haley Russell – Creative Writing

Mentor: Staci Stone

The Woodhouse's Use of an Apothecary: The Ambiguous Mr. Perry

Nearly all of Jane Austen's novels are influenced by the medical reformation that was occurring in early Regency England at the time of her writing. This is especially true for *Emma*, a novel about a young girl who is obsessed with matching her peers and family with spouses, but rebels against the idea of marriage for herself. Emma Woodhouse is a woman of high social standing, who is to inherit a large sum of money from her father, Mr. Woodhouse, the amiable hypochondriac with whom scholars tend to quickly fall in love. Numerous scholars discuss his hypochondria, or lack thereof, but there are hardly any discussions on the role of Mr. Perry, his trusted apothecary. Many scholars wrongly label Mr. Perry a physician. During the Regency Period, a strict medical hierarchy was in place physicians were at the top, surgeons next, and apothecaries at the bottom. Defining these medical roles is critical to understanding the medical and social dilemmas at the time *Emma* was published in 1815. Wealthy Mr. Woodhouse should not have made use of an apothecary, a mere uneducated tradesman. By including Mr. Perry, however, Austen seems to be participating in a social debate. In 1815, the same year *Emma* was published, the Apothecaries Act was passed by Parliament. Apothecaries were rising to become general practitioners though there were still several debates on the merit of their qualifications. Understanding Mr. Perry's role and the role of medicine in general in *Emma* is critical to the development of a deeper knowledge of Regency England and the novel itself.

Craig Schadler - Nursing**Mentor: Jessica Naber & Joanne Hall*****A Narrative Analysis of Baccalaureate Nursing Students' Nurse-Patient Clinical Reflections***

The purpose of this study was to identify characteristics of critical thinking in nursing students' reflective writing assignments, which was guided by Richard Paul's model of critical thinking. The importance of critical thinking as an outcome for students graduating from undergraduate nursing programs is well-documented by both the American Association of Colleges of Nursing (AACN) and the National League for Nursing (NLN). Graduating nurses are expected to apply critical thinking in all practice situations to improve patient health outcomes. In a previous study, Paul's model of critical thinking was used as a basis to develop questions for reflective writing assignments. Within this study, students completed six open-ended nursing students' narratives of nurse-patient clinical encounters during an eight-week clinical experience. Following completion of those assignments, improvements were seen in critical thinking scores. This is a report of the qualitative analysis of the content of student responses during the intervention. A narrative analysis approach was used. Researchers open-coded for content and three members of the research team performed repetitive readings of the narratives to enhance rigor. From these processes, narrative themes were derived. Each of the themes was defined and exemplars from the data were used to support the credibility of the findings. This study provided information as to how students critically think in and about nurse-patient clinical encounters. Identified themes provided information to nursing faculty members so that they could better understand students' critical thinking abilities and skills.

Caroline Schmidt – Geoarchaeology**Mentor: Anthony Ortmann*****Honors Thesis Defense: Comparing Horizontal and Vertical Microartifact Samples to Determine the Function of Mound C at the Poverty Point Site***

The Poverty Point site in northeastern Louisiana is comprised of several Late Archaic period earthworks, including a series of mounds, six concentric earthen ridges, and an artificial plaza. Little research has been conducted on the site's mounds, including a low-rising mound called Mound C. Microartifact analysis, a geoarchaeological approach to studying small artifact fragments, was used to provide more information about the possible activities that took place on Mound C and the purpose of the mound within the larger Poverty Point site. Horizontal samples were collected from the surfaces of the Mound C construction platforms and vertical samples were collected from the construction platform fill. The microartifact analysis results of both sample types will be compared and discussed for this thesis defense.

Caryn Shaw – History and Japanese

Mentor: Masayo Kaneko

Higuchi Ichiyo's Suffering Heroines

In the words of Timothy Van Compernelle, Higuchi Ichiyo's female characters are suffering heroines and each displays an unhappiness in their lives that is a response to and a critique of the growing patriarchy of the Meiji era. Ichiyo's protagonists struggle to break free of confining Confucian gender roles, such as daughter, mother, and wife that each require women to subjugate themselves to an authority figure. Ichiyo's protagonists struggle, and while a few manage to succeed, in the end they all fail to achieve the happiness they seek. Examining four of Ichiyo's famous works, I will discuss the nature of the plight of her protagonists, and the ways in which they succeed and fail to achieve their goals of taking control of their own lives, and the real world implications of her characters' unhappy existences.

Kari Shemwell – English and Spanish

Mentors: Janice Morgan & Mike Waag

The Influence of American Imperialism in Innocent Eréndira and Other Stories

Gabriel García Márquez remains one of the most influential and well-known Latin-American writers of the twentieth century. Known world-wide as the pioneer of the literary style known as "magic realism," Márquez has influenced the works of many writers through his incorporation of magical elements in otherwise normal scenarios. He is best known for his novels *One Hundred Years of Solitude* and *Love in the Time of Cholera*, but his body of work also encompasses a wide range of short stories, including the collection *Innocent Eréndira and Other Stories*. The collection, named after the included novella *The Incredible and Sad Story of Innocent Eréndira and Her Heartless Grandmother*, takes place in Columbia (mostly in the fictional town of Macondo that Márquez used frequently in his writings). Throughout the collection, Márquez reveals his distaste for the influence of the United States in Latin-America in both subtle and obvious manners. This research paper aims to analyze the collection and highlight the ways in which Márquez comments on the economic and social situation of Latin America during the age of American Imperialism.

Kari Shemwell – English and Spanish

Mentors: Warren Edminster & Laura Dawkins

Audre Lorde: Poetry and Problems of the Feminist Movement

The term “second-wave feminism” refers to the feminist culture that developed and existed from the 1960s to the 1980s. Instead of focusing on issues such as suffrage (the main target of first wave-feminism), the second movement addressed social issues in the U.S. that erupted during the immense economic boom that followed World War II. The main issues included the disapproval of restored domesticity after the war, the introduction of the first contraceptive pills, marital and sexual rights, and inequalities in the workplace when many women began working outside of the home. However, though second-wave feminism appeared to push for equality on all fronts, its strongest movements were aimed mostly at middle-class white women, leaving women of the working class, especially minorities, in the wake. For my scholar's week presentation, I intend to speak about the ways in which the second-wave feminist movement failed to appeal to women of color due to ever-present issues of race. In addition to this, I plan to explore the conflict between the civil rights movement and the feminist movement, which essentially forced black women to choose between supporting their race or their gender. I will also explore the ways in which the backlash against the racial inequalities of second-wave feminism essentially gave birth to third-wave feminism. By analyzing the poetry written by Audre Lorde, I will demonstrate the ways in which women from minority backgrounds paved the way for a new era of feminism by highlighting the need for universal equality as part of the feminist movement.

Rebecca Selby – Dietetics

Mentor: Kathy Timmons

Acceptability of Gluten Free Cakes Prepared with Rice Flour and Xanthan Gum

Purpose: To determine if using a gluten-free flour with xanthan gum in place of wheat flour in cakes to accommodate the quickly increasing number of people with some type of gluten sensitivity is acceptable to consumers on sensory and physical qualities.

James Smith - Geoscience**Mentors: Robin Zhang & Charles Yorke*****Monitoring Sex Offender Compliance in the Pennyriple District of Western Kentucky***

Compliance of registered sex offenders has come into question over the past two decades. Local authorities are tasked with maintaining and controlling all registered sex offenders within their jurisdiction. Yet there is a certain amount of ambiguity that exists within current sex offender regulations. Registered sex offenders in the state of Kentucky are not permitted to reside within on thousand feet of a school, daycare, or park/playground. In order for a sex offender to be considered compliant they are required to register their place of residence with state authorities for a predetermined amount of time. However it is the sex offender s responsibility to make sure they are not within one thousand feet from any of the restricted structures. This study looks at the rates of compliance and overall accuracy of the Kentucky State Police s website for registered sex offenders within the Pennyriple District of western Kentucky by comparing the sex offender s residencies in relation to restricted structures. A geodatabase was constructed for the study area and a buffer of 1000 feet was applied to the boundaries of all restricted structures to determine the total area that is off limits to sex offenders. The addresses of all registered sex offenders within the Pennyriple District was then geocoded and compared to the restricted areas to determine which (if any) sex offenders were within 1000 feet of a restricted structure and therefore not in compliance with state law.

Demi St John – Physics and Mathematics**Mentor: Joshua Ridley*****Bright X-ray Point Sources in our Galaxy***

The brightest point sources of X-rays in the sky will be determined by cross-referencing two catalogs of data, the ROSAT and Chandra Source catalogs. Upon determining the brightest sources, the research will continue into which of those sources have been studied at radio wavelengths. Then a proposal will be written to utilize a radio telescope, possibly the Green Bank or Arecibo Telescope. This proposal will be to search for radio signals at the same position in the sky as the source of X-rays, which could possibly be a rapidly rotating neutron star.

Michael Stonewall - Geosciences

Mentor: Kit Wesler

An Integrated Remote Sensing and GIS Approach to Assessing Landslide Hazard Management in the Appalachian Mountains of Eastern Kentucky

Traditionally, earth scientists have assessed landslide occurrence on the basis of geomorphological investigations carried out through image interpretation and fieldwork. Conversely, local administrators primarily evaluate the impact of landslides on the basis of historical socioeconomic records (Carrara 2003). The goal was to assess landslide susceptibility in the Appalachian Mountains of Eastern Kentucky. Geographic and attribute information about landslide events were compiled from Kentucky Transportation Cabinet (KYTC) archives, public reports, and classifications of remotely sensed imagery. The spatial distribution of landslides as explained by both physical and social factors such as slope, aspect, land-use, and road networks was used to identify significant landslide triggers within the study area. Several landslide susceptibility maps were produced using various quantitative methods including discriminant analysis and logistic regression. Each method was calibrated by correlating the landslide frequencies of different classes (very high, high, moderate, low, and very low). In coming years Eastern Kentucky particularly counties along the eastern boundary can expect loss of life and resources due to landslides. Landslide susceptibility maps help further explain factors believed to cause landslides, aids government with implementation of ground monitors, and counsels land managers on feasible areas for urban expansion.

Michael Stonewall - Geosciences

Mentor: Robin Zhang

The Application of GIS-based Logistic Regression for Landslide Susceptibility Mapping in the Appalachian Mountains: Harlan County, Kentucky

This study follows Ayalew and Yamagishi's application of GIS-based logistic regression for landslide susceptibility mapping in the Kakuda-Yahiko Mountains, Central Japan (2005). The goal is to produce a similar map within a 130-km² watershed in the central region of the Appalachian Mountains. This area in Eastern Kentucky which partly drains the Upper Clover Fork Cumberland River was chosen because of its frequent landslide occurrences along Route 38. The resulting regression function quantified the relationship between a set of factors historically believed to cause landslides such as slope and lithology (independent variables) and the presence or absence of landslide events (dependent variable). Using the Kentucky Geological Survey's (KGS) Landslide Information Map, a dependent variable which received a value of 0 for the nonexistence and 1 for the existence of slope failures in the study area was produced from 31 documented landslides. Other independent variables were aspect, land cover and road networks. The effect of each parameter on slope failure was measured from its corresponding coefficient in the regression equation. Interpretations of coefficients explain which factors have significant effects on the spatial distribution of landslide events. This allowed a transformation of the probability of landslide occurrence between 0 and 1 across the entire study area. The final map shows five categories of landslide susceptibility (extremely low, very low, low, medium and high) in the mountainous locality of Holmes Mill, Kentucky.

Elizabeth Tarter – Biology & Alexander Earhart - Biology

Mentors: Claire Fuller & Donald Adongo

Describing Tropical Termite Nest Growth and Decline Patterns Using Logistic Growth Models

Termites act as ecosystem engineers, capable of recycling most dead organic material and maintaining the flow of resources in a tropical ecosystem; this characteristic may be especially important on St. John, USVI, where the arboreal nesting termite, *Nasutitermes acajutlae* is the major invertebrate degrader. Our goal is to investigate nest growth, decline, and longevity on St. John, as well as to understand how biotic and abiotic factors affect changes in nest size and survival, via mathematical models. We have collected natural history data on >200 *N. acajutlae* nests from five major habitat types (dry, mangrove, moist, sparse, wooded/wetlands) spanning the years 1998-2012. We developed an adaptive logistic model using nest volumes from these years capable of describing the patterns of nest growth and decline from year to year for each habitat. We observed that growth and decline, and general nest size patterns were typically unrelated between habitats. However, each habitat has its own typical pattern of growth and decline. Using this model, it is possible to estimate when nests first appeared and their likely longevity, enabling us to effectively determine the average nest lifespan for each habitat. In the future, we will incorporate both abiotic (i.e., ambient humidity and ambient temperature) variables, and intrinsic biotic (e.g., production of alates) to estimate their affects on nests in each habitat. This will allow us to predict the efficacy of termite degradation in tropical ecosystems in changing environmental conditions.

Allison Theobald - Nursing

Mentor: Jessica Naber

Moral Distress in Baccalaureate Nursing Students

The purpose of this study was to review the moral distress levels of baccalaureate nursing students at a rural public university. Subjects (n=160) completed a questionnaire to determine the level and frequency of moral distress triggered by given clinical situations. Analysis of the results using qualitative descriptive comparison, age, sex, gender, and marital status revealed no influence on the levels of moral distress. The amount of school clinical experience had a positive relationship with levels of moral distress. The clinical situations that generated the greatest amount of moral distress most frequently in baccalaureate nursing students, were as follows: 1) Following the family's wishes for the patient's care when the student did not agree with them, 2) Carrying out a work assignment in which the student did not feel professionally competent, 3) Working with levels of staffing that the student considered unsafe, 4) Observing without taking action when care personnel did not respect the patient's privacy, 5) Working with nurses who were not as competent as the patient care required, 6) Working with nursing assistants who were not as competent as patient care required, and 7) Being required to care for patients the student was not competent to care for. These seven clinical areas were found to cause significant moral distress in students and need to be addressed by nursing educators.

Amanda Thomas – Biological Sciences & Nhan Huynh – Biological Sciences

Mentor: Dayle Saar

Determining the Northern Limit for Red Mulberry (*Morus rubra*) Using DNA-identified Individuals

Red Mulberry (*Morus rubra*) trees provide food for wildlife, and are one of the earliest fruits to ripen, long before nuts and other late summer and fall fruits are available. The native Red Mulberry looks similar to the non-native, weedy White Mulberry (*M. alba*), and the two species frequently hybridize. Current taxonomic keys used to differentiate between the two species have relied almost exclusively on the degree and position of leaf pubescence. Based on our DNA sequences from both nuclear and chloroplast regions, we have concluded that reliance on leaf pubescence for identification purposes is inadequate and, in many instances, results in identification of the wrong species. Red Mulberry, as identified by its DNA, does not actually occur as far north as the current and historical range maps indicate. Our results indicate that White Mulberry is more cold-hardy. Crosses with Red Mulberry impart cold-hardiness to the hybrids, resulting in hybrids with increased fitness over Red Mulberries, at least where Red Mulberries are stressed by winter temperatures. Results from a previous study suggest the northern limit of “true” Red Mulberry may be in the southern region of Illinois. We analyzed the DNA sequences of individuals collected throughout the state of IL to better understand the limits of this species, and to evaluate its status in the state.

Beatrice Turner - Biology

Mentors: Timothy Johnston & David Ferguson

Genomic Analysis of *Agrobacterium tumefaciens* CRR14

Every living organism requires nitrogen in a consumable form to thrive. The process of nitrogen fixation, whereby atmospheric nitrogen is converted to ammonia, in the nitrogen cycle is particularly germane to the scope of this research. Microorganisms that have the ability to fix nitrogen, diazotrophs, provide a vital source of utilizable nitrogen to plants. One such diazotroph, *Agrobacterium tumefaciens*, is a rod shaped gram negative soil bacterium. *A. tumefaciens* is a pathogenic organism that causes crown gall in plants. By inserting transfer DNA from its Ti plasmid, *A. tumefaciens* can effectively proliferate within a plant. The Ti plasmid *A. tumefaciens* possesses and its ability to be inserted into plant cells provides an effective vector to transmit any genetic material to plants. Indeed, *A. tumefaciens* has been used extensively to produce transgenic plants. From this concept, a target for research should be to transfer nitrogen fixation (*nif*) genes to plants with no nitrogen-fixing capabilities. Attempts have yet to be made to isolate the *nif* genes from *A. tumefaciens* for this purpose. The subject organism, *A. tumefaciens* CRR14, of this research was isolated from Ledbetter Creek, KY. Work has been done to sequence the genome of *A. tumefaciens* CRR14; compare it to other known strains, *A. tumefaciens* C58 and H13-3; and propose suggested sites for the *nif* operon.

Linden Villines - Psychology**Mentor: J. Ian Norris*****Feeling Grateful in the Face of Tragedy***

In the Spring of 2012, a student committed suicide by jumping from the 7th floor of a building on campus. About 30 minutes before one particular testing session that involved thought-listing and a gratitude-questionnaire, the researcher was unaware of the event but the participants were. Thoughts listed in the thought-listing portion of the study involved the suicide and the participants in this study showed more gratitude after the tragedy rather than prior. Previous research has shown that expressing gratitude can be beneficial under adversity, but these results indicate that adversity itself can increase gratitude. In a follow-up study, we predict that we can induce gratitude in individuals by presenting an adverse stimulus. We have students that were present Spring of 2012 and students that were not as participants. These participants read the article about the suicide from the local school paper and complete writing exercises about their thoughts, feelings and experiences from the topic presented in the article, report how grateful they feel, and answer questions about how it affects their life today. These results are then compared to a control condition made up of freshmen that read an article about local area codes. Then, we can see whether presenting a tragedy can induce gratitude whether they had experienced the event before or not.

Devin Wade – Liberal Arts: English & Psychology**Mentors: Barbara Cobb & William Zingrone*****Understanding How the Brain Perceives Colours and Patterns***

With fashion changing on a daily basis, designers and wearers alike must decide what will look good on the human form. From the material, to the cut, to the design on the fabric, choices must be made in favor of what the wearer will buy, look, and feel good in. To understand what the consumer will find in good taste, it is important to understand the psychology behind what humans have learned about colours themselves and how they interact with other colours and in patterns. It is also helpful to develop an understanding of how the human body, particularly the brain, perceives colours and patterns. It has been a widely accepted idea that humans perceive colours and patterns in a way that places them into categories. Colour has been incorporated into logos, clothing, signs and photography to help convey ideas, to place emphasis on certain aspects of the overall design and for cultural or religious purposes. Humans, over time, have learned that certain colours and patterns can represent emotions or an idea, some of which are universal and some are relative to the culture. Regardless of where in the world a person may live, as humans, they are attracted to colours; to those found in the natural world and those invented by designers and artists to put on works of art and products. The fashion industry has embraced a plethora of colours and mixed them not just in traditional ways but surprising combinations that are controversial.

Matthew Wallace – Zoological Conservation

Mentor: Howard Whiteman

Population Trends of Copes Gray Tree Frogs in Murphy's Pond Kentucky

It is well documented that amphibian populations are in decline around the world and that amphibians are a very useful biological indicator of ecosystem health. A common issue faced by amphibian populations is habitat degradation, including climate change. Over an eight year study (2004 -2012) population trends of Cope s Gray Tree Frogs, *Hyla chrysoscelis*, were recorded within Murphy s Pond, a Kentucky State Nature Preserve. By comparing tree frog population estimates and body condition with climatic variables such as precipitation and temperature, we investigated the degree to which such variables correlate to the success of Copes Gray Tree Frogs.

Allison Weaver - Nutrition

Mentor: Kathy Timmons

Acceptability of Chocolate Cake Prepared with Bananas and Prunes as a Fat Substitute

The purpose of this experiment is to evaluate the effects on color, texture, moisture, flavor, and overall acceptability when prunes and bananas are used as a fat substitute in chocolate cake.

Synthia Wilkins – Agriculture Technology, Kaytlin Young – Youth and Non-Profit Leadership, & Tim Washum - Telecommunications Systems Management

Mentor: Roger Weis

Christmas Bazaar

Our service learning project was titled “Christmas Bazaar”. We partnered with Angels Attic in Murray, Kentucky to help get ready for their annual Christmas bazaar. Angels Attic is a non-profit organization that sells donated items and all the proceeds go to a local ministry called Angels Community Clinic, where the proceeds make up 75% of the clinic’s budget. The Angels Community Clinic provides medical assistance to citizens of Calloway County that work but do not have insurance to help see a doctor or dentist. Our project was to help put together trees to get set up at the bazaar, for the trees are the main benefit at the bazaar. At the bazaar, \$400 alone was made for the clinic from the trees alone. We discovered that even a small part that we played in the bazaar as a whole, we made a big difference in the community.

Allison Wilson – Secondary English Education

Mentor: Staci Stone

Love in Emma: An Expression of Austen's Desires

Although many scholars have analyzed the roles that courtship, love, and marriage play individually within Jane Austen's novels, few have sought to investigate their intertwining role. In her novel *Emma*, Austen uses these three topics in order to portray the change she wishes to see in society at the time. In early nineteenth-century England, marriage was often seen as a way to retain one's social position, move up in social class, and carry on the family name. Little thought was given to courtship and love in the matter. By blatantly portraying the courtship of Emma Woodhouse and George Knightly throughout her novel, Austen emphasizes the role it plays in one falling in love and leading to a successful, happy marriage. Over the course of the novel, Austen shows a progression in the understanding of love, indicating to the reader what love really is. By doing this through her examples of courtship, failed relationships, and successful marriages, Austen defines love as a deeply intimate connection that develops between a couple over time and is an essential component to a successful marriage. Instead of depicting society accurately, Austen took a bold and brave step at the time by displaying the world of her novel the way she desired reality to be. Through her writing, Austen was able to make the fairytale love stories she wanted in her own life come true through pen and paper.

Steven Wilson – Political Science

Mentor: Ann Beck

The Effect of Presidential Party on Firearms Sales Since 1980

The question this paper is trying to answer is whether the political party of the president influences firearms sales. The method I used is literature review of scholarly works as well as analysis of data from the Bureau of Alcohol, Tobacco, and Firearms. My findings from the review of the literature are the impact of presidential party on firearms sales is mixed. Spikes in firearms sales have mainly been attributed to the economy, natural disasters, and fear of violence. Although since 2008 firearms sales have been on the rise due in part to citizens' fear of firearms regulation from President Obama, there has been little evidence to show that the party of the president impacts sales. President George W. Bush's presidency saw an increase of firearms sales while President Bill Clinton did not see a significant increase. Throughout Clinton's presidency firearms sales were stagnant. My conclusion is that the presidential party in particular does not usually impact firearms sales; there are several other factors that have a more significant influence.

**Carli Whittington – Biology, Carlynn Rekosh – Biology, & Chesika Crump -
Biology**

Mentor: Terry Derting

Experimental Analysis of the Relationship Between Parasite Burden and Cognitive Abilities in House Mice (*Mus musculus*)

During early mammalian development, the energetic cost of mounting an immune response may deplete available energy allotments from other biological processes such as brain development. Eppig et al. reported that parasitic infections may affect development of an organism's nervous system, resulting in reduced cognitive ability. Our goal was to determine whether parasitic burden is related with cognitive ability. We tested the null hypothesis that parasitism does not affect the cognitive ability of lab mice. Using *M. musculus*, adults were bred and neonates from 10 litters were infected with the gastrointestinal nematode *Heligmosomoides polygyrus*. Control neonates from those same 10 litters were not infected for comparison. At 21 days of age, both groups were subjected to parasite load enumeration through fecal egg counts. At 35 days of age, both groups were subjected to a spatial memory test using a T-maze. After T-maze completion, each mouse was euthanized and the brain removed and mass recorded after drying. There was no significant difference in the dry brain mass of the parasitized and non-parasitized mice. We also failed to see any significant difference between the percent of successful T-maze trials for the parasitized compared with the non-parasitized group. Likewise, within the parasitized mice, parasite egg count and percent success on the T-maze was not correlated significantly. Our work showed that parasitic infection prior to sexual maturation had no effect on the cognitive ability of *M. musculus*. These results did not support a relationship between parasitic burden during post-natal development and cognitive ability.

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