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Celebration

Celebration 2014

May 2nd, 8:00 AM - 5:00 PM

Celebration Schedule 2014 (Friday)

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Description

Full presentation schedule for Celebration, Friday, May 2, 2014

Location

Gettysburg College

Disciplines

Higher Education

Posters

Poster Session I

4.00pm - 5.15pm

Science Center 2 and 3 Lobby

Aimee Becker '14
Aleksandra Petkova '14
Alyssa MacNeill '14
Amy Violante '17
Annamaria Capobianchi '18
Anne Patterson '14
Ashley Tedrick
Asnika Bajracharya '14
Brittany Clark '14
Caitlin Hay '14
Cara Pietrolungo '14
Chad MacLeod '14
Christina Casillo '14
Christina Soma '14
Crystal Williamson '17
Cymone Card '14
David Gilmore '14
Elizabeth Andresen '14
Elizabeth Kuhn '14
Elizabeth Nagel '14

Emily Hall '15
Eric Yurko '17
Erinn McConville '14
Gina Abraham '14
Grace Madland '14
Grace Van Scoyk '15
Gregory Brittingham '14
Helena Yang '14
Jennifer Soroka '14
Jessica Schulze '17
Jill Duranko '14
Joseph Portale '14
Joshua Griffiths '14
Julia Harper '17
Katherine Pavlos '17
Katlyn Corsentino '14
Kayla Grieco '14
Kimberly Houston '15
Laura Arnold '14
Laura Pulver '14

Laura Valente '17
Lauren Nowicki '14
Lindsay Komsa '14
Lorela Ciraku '14
Marcela Pallete '14
Maura Magistrali '14
Michael Kielbasa '15
Michael McGrane '14
Monica Doring '15
Nathan Wojick '17
Ryan Day '14
Ryan McCabe '15
Samuel Schwarz '14
Stephen Patrick '14
Taylor Moscatiello '14
Victoria Biegel '14

Panels

Africana and Civil War Era Studies Panel

4.00pm - 5.15pm

Science Center 153

Biankah Ciceron '14
Logan Tapscott '14

Rebecca Barth '16

Asian Studies Senior Capstones

4.00pm - 5.15pm

Science Center 151

Emma Wells '14
Katherine Ryberg '14

Kathryn Tolley '14
William Segraves '14

Environmental Studies Senior Honors Theses Presentations

4.00pm - 5.15pm

Science Center 300

Adrienne Ellis '14
Alyson Hampsch '14

Jessie Pierce '14
Sondra Winders '14

Art

A Sense of Place: Expressing Location by Triangulation

4.00pm - 5.15pm

West Building 1N Hallway

Anastasia Mogilevski '17
Brooke Beisner '17
Catherine Gregg '17
Charlotte Scheper '17
Colleen Kolb '17
Dakota Homsey '16

David Rampersad '17
Huanjia Zhang '17
Kyle Morris
Margaret Whiteman '17
Richard Power '17
Robert Burch '17

Samantha Nestor '17
Sarah Martineau '16
Taylor Larsen '14

Posters

Poster Session I

4.00pm - 5.15pm

Science Center 2 and 3
Lobby

Anthropology

Amy Violante

The Life History of Broccoli

Katlyn Corsentino

The Power of Public Space: Parades and Murals in Northern Ireland

Biology

Annamaria Capobianchi, Julia Harper

Nuclear morphology and microtubule dynamics of a deletion of the double stranded DNA damage repair gene: Rad54 in *Aspergillus nidulans*.

Crystal Williamson, Jessica Schulze

Fluorescence microscopic investigation of the *Aspergillus nidulans* double-strand break processing protein, scaANbs1.

Eric Yurko, Nathan Wojick

Interaction of ζ chkAChk1 with a DNA-damage sensitive snoARif1 mutation in *Aspergillus nidulans*.

Gregory Brittingham

Advancements in Cancer Diagnostics: The Search for a Molecular and Cellular Preservative to be used with the CellSearch Circulating Tumor Cell Capture System.

Joseph Portale

Identification of R-Spondin Fusions in Cancer

Poster Session I

4.00pm - 5.15pm

Science Center 2 and 3
Lobby

Biology

Katherine Pavlos, Laura Valente

Pavlos, Katherine and Valente, Laura. Analysis of genetic interactions between gen1 and nimODbf4 in *Aspergillus nidulans*.

Lorela Ciraku

Epigenetic down-regulation of snxAHrb1 rescues G2-M cell cycle defects

Computer Science

Michael Kielbasa

Analyzing and Predicting Pitcher's ERA

Economics

Michael McGrane

The Dynamic Effects of Government Spending on Output During Periods of Monetary Accommodation

French

Alyssa MacNeill, Grace Madland, Laura Pulver, Maura Magistrali

Meurtres à Paris: Digital Mapping of Space in French Detective Fiction (Maigret)

Ashley Tedrick, Gina Abraham, Joshua Griffiths, Samuel Schwarz

Meurtres à Paris: Digital Mapping of Space in French Detective Fiction

Poster Session I

4.00pm - 5.15pm

Science Center 2 and 3
Lobby

Health Sciences

Cara Pietrolungo, David Gilmore

The Effects of *Cissus quadrangularis* on Body Composition and Blood Lipids in Healthy College-aged Males and Females

Christina Casillo

Gettysburg Family Practice: Health Sciences Summer Capstone

Elizabeth Kuhn, Stephen Patrick

A Physiological Investigation of Elliptical Road Cycling as Compared to Traditional Cycling at Three Constant Workloads

Helena Yang

Using Photovoice for cross-cultural exchanges exploring global food issues in a local community

Mathematics

Aleksandra Petkova

Understanding the Dynamics of Child Sleep through Mathematical Modeling: Connections between Early Sleep Patterns and Brain Maturation in Toddler and Preschool Children

Ryan Day

On the Size of Spanning Sets in Cyclic Groups

Poster Session I

4.00pm - 5.15pm

Science Center 2 and 3
Lobby

Organization and Management Studies

Victoria Biegel

Predictors of Family and Work Enrichment

Physics

Asnika Bajracharya

Radiation in Soil

Caitlin Hay

Behind the Eclipse: Observations of the Eclipsing Binary System EU Pegasi

Lauren Nowicki

Conductivity of Electrospun Poly(ethylene oxide) Nanofibers Doped with Single Walled Carbon Nanotubes for use in Cell Regeneration Scaffolds and Biosensors

Ryan McCabe

Star Spot Photometry: Rotational Periods in NGC 6811

Poster Session I

4.00pm - 5.15pm

Science Center 2 and 3
Lobby

Psychology

Aimee Becker, Monica Doring

The Effect of Isolation Rearing and Cat Odor in Wistar Rats

Anne Patterson, Elizabeth Andresen

The Lucky Chicken: Examining the Relationship between Superstition and Musical Performance

Brittany Clark, Laura Arnold

The Effect of Short-Term Isolation and Morphine on Play Behavior in Sprague-Dawleys

Christina Soma

Mindfulness and Grief Related Ruminating Thought

Cymone Card, Victoria Biegel

Power Postures and Action

Elizabeth Nagel, Taylor Moscatiello

The Effects of Hand Cleansing on Luck and Risk Taking.

Emily Hall, Grace Van Scoyk

The Effect of Isolation and 5HT_{1A} Receptor Partial Agonist on Anxiety in Sprague-Dawley Rats

Erinn McConville, Marcela Pallete

The Effect of Temperature and Likeability of a Held Beverage on Descriptive Language About One's Best Friend

Poster Session I

4.00pm - 5.15pm

Science Center 2 and 3
Lobby

Psychology

Jennifer Soroka, Kimberly Houston

The Effects of Familiarity and Morphine on Social Approach and Avoidance Behavior in Fischer 344 Rats

Jill Duranko

Safe and Sound: The Effect of Security on Negative Stereotypes and the Self

Kayla Grieco, Lindsay Komsa

The Effect of Body Scaling and the Mental Number Line on Tall and Short Quantitative Judgments

Sociology

Chad MacLeod

Clawing Away at the Complex Web of Tourism Relations in the State of Maine's Lobster Tourism Industry

Panels

Africana and Civil War Era Studies Panel

4.00pm - 5.15pm

Science Center 153

Africana Studies

Biankah Ciceron, Rebecca Barth

Africana Studies Panel

Civil War Era Studies

Logan Tapscott

From Contraband to Freedom: African Americans' Struggle for Housing Opportunities in DC Metropolitan Area

Asian Studies Senior Capstones

4.00pm - 5.15pm

Science Center 151

Asian Studies

Emma Wells, Katherine Ryberg, Kathryn Tolley, William Segraves

Asian Studies Senior Capstones

Environmental Studies Senior Honors Theses Presentations

4.00pm - 5.15pm

Science Center 300

Environmental Studies

Adrienne Ellis, Alyson Hampsch, Jessie Pierce, Sondra Winders

Environmental Studies Senior Honors Thesis Presentations

Art

A Sense of Place: Expressing Location by Triangulation

4.00pm - 5.15pm

West Building 1N Hallway

Art and Art History

Anastasia Mogilevski, Brooke Beisner, Catherine Gregg, Charlotte Scheper, Colleen Kolb, Dakota Homsey, David Rampersad, Huanjia Zhang, Kyle Morris, Margaret Whiteman, Richard Power, Robert Burch, Samantha Nestor, Sarah Martineau, Taylor Larsen

A Sense of Place: Expressing Location by Triangulation (Introduction to Drawing)

Africana Studies

Africana Studies Panel (Panel)

Student(s):

Biankah Ciceron, Rebecca Barth

Mentor(s):

Abou Bamba
McKinley Melton

Time/Location:

4:00pm - 5:15pm
Science Center 153

Anthropology

The Life History of Broccoli (Poster)

Student(s):

Amy Violante

Mentor(s):

Amy Evrard

Time/Location:

4:00pm - 5:15pm

Science Center 2 and 3
Lobby

Looking into the life history of broccoli, and putting the crop in a cultural context, reveals meanings that would probably never otherwise occur to the average American broccoli consumer. Historically, broccoli originated in the Mediterranean region and was introduced to the United States in the 1920s, making it a relatively new product for American consumers. In terms of the globalization of this commodity, Guatemala supplies a large portion of America's demand for broccoli, and the crop has a significant meaning to the broccoli farmers, as they try to improve the lives of their families. This concept brings the cultural aspect of social class into the life history of broccoli, as low class Guatemalan farmers supply middle class American consumers with the product. The Guatemalan production of broccoli also brings in the cultural discussion of gender differences, because women primarily harvest the broccoli for export. Today, a lot of researchers are looking into the health benefits of broccoli. It is known to have a lot of nutritional value, due to its high content of vitamins and minerals, and it also has many recently discovered disease-fighting properties. American consumers may be aware of many of the health benefits broccoli has when eating it or seeing it in the grocery store, but most people probably do not realize the significant meaning broccoli has to the lives of some people. These meanings are revealed as the crop is traced through time and around the world, and looked at in a cultural context.

The Power of Public Space: Parades and Murals in Northern Ireland (Poster)

Student(s):

Katlyn Corsentino

Mentor(s):

Matthew Amster

Time/Location:

4:00pm - 5:15pm

Science Center 2 and 3
Lobby

This is a presentation of research for a senior capstone in anthropology. In Northern Ireland public space is used as a medium for displaying identity and asserting both territory and power. Identities are created and maintained using visual means such as parades, murals, and flags. These are used as statements of dissent and sectarian leanings. They are also means of defining both real and imagined territories in the cities of Belfast and Derry/Londonderry. My study is based on secondary anthropological writings and my own experiences and research while abroad in the Northern Ireland and the Republic of Ireland.

Art and Art History

A Sense of Place: Expressing Location by Triangulation (Introduction to Drawing) (Art)

<u>Student(s):</u>	<u>Mentor(s):</u>	<u>Time/Location:</u>
Anastasia Mogilevski, Brooke Beisner, Catherine Gregg, Charlotte Scheper, Colleen Kolb, Dakota Homsey, David Rampersad, Huanjia Zhang, Kyle Morris, Margaret Whiteman, Richard Power, Robert Burch, Samantha Nestor, Sarah Martineau, Taylor Larsen	Tina Gebhart	4:00pm - 5:15pm West Building 1N Hallway

Demonstrating an artistic sense of a place requires more than a single view. By developing a trio of drawings, introduction to drawing students triangulate that place. More than a trio of standard views, the combination of these three visual experiences will build a varied understanding of location through the experience, conceptualization, and hands of these artists.

Asian Studies

Asian Studies Senior Capstones (Panel)

<u>Student(s):</u>	<u>Mentor(s):</u>	<u>Time/Location:</u>
Emma Wells, Katherine Ryberg, Kathryn Tolley, William Segraves	Eleanor Hogan Frederick Gaenslen Zhining Hu	4:00pm - 5:15pm Science Center 151

Emma Wells

Individual Abstract

The Sustainability of China's Economic Growth:

A Study on China's Income Inequality and its Relationship with Economic Growth

This research explores the impact of the growing income inequality throughout China on the rate of economic growth. The analysis, based on a panel of 31 provinces over 35 years, controls other determinants of economic growth as well as adjusting for various panel data estimation issues such as heteroskedasticity, omitted variable bias and autocorrelation. The empirical regression results will show trends within this relationship between the rate of income inequality growth and economic growth, when controlling for other determinants of economic growth in the years following the opening up the Chinese economy.

Katherine Ryberg

Individual Abstract

Godzilla as Symbol and Star: How a Japanese Monster Won American Hearts

Having starred in twenty-eight films over a span sixty years, and with an American reboot premiering this May, Godzilla is the oldest and longest running film series in history. Through analysis of representative films of the Godzilla series, the historical, political, and industrial contexts in which those films were released, and their popular and critical reception in the US and Japan, I discuss why the series was so successful and why it still survives today.

Kathryn Tolley

Individual Abstract

Mapping a New World: Establishing and Contextualizing the Fantastic in Murakami Haruki's "1Q84"

My project focuses on the way in which Murakami Haruki establishes and contextualizes the sometimes-fantastical setting of his lengthy novel, "1Q84", using two lenses--the science fiction tropes and aesthetics discussed by scholar Istvan Csicsery-Ronay, Jr., and an exploration of Murakami's extensive use of intertextual references.

While invented words, altered history and mysterious forces make the world of "1Q84" an unreal one, Murakami's use of intertextual references helps to connect the unknown of "1Q84" with material that is more familiar to his readers. Thus, through the combination of science-fictional elements and intertextual connections, Murakami constructs a world that is both fantastical and relatable.

William Segraves

Individual Abstract

The Importance of Third Plenary Session Communiques to the Legitimacy of the Chinese Communist Party

The Chinese Communist Party has, for decades, faced a legitimacy problem, in that its officials are not elected by the people, or entirely accountable to them. This paper examines the way in which the CCP uses statements of intent, through plenary session communiques, to help legitimize their rule of China. More specifically, this paper utilizes communiques from 3rd Plenary Sessions: communiques designed to discuss areas of necessary reform.

Biology

Advancements in Cancer Diagnostics: The Search for a Molecular and Cellular Preservative to be used with the CellSearch Circulating Tumor Cell Capture System. (Poster)

Student(s):

Gregory Brittingham

Mentor(s):

Steven James

Time/Location:

4:00pm - 5:15pm

Science Center 2 and 3
Lobby

Due to the inaccessibility of most tumors, current cancer treatment methods are not as effective as they could be. A highly invasive biopsy is taken at diagnosis often coupled with surgery to remove as much tumor mass as possible. Tumors capable of spreading to other parts of the body, known as metastatic tumors, release millions of cells into the blood stream that are normally destroyed by the body. Over the last 20 years a platform has been developed to isolate these metastatic cells (known as circulating tumor cells) from blood. This system, known as the CellSearch® Platform, is currently used to measure numbers of circulating tumor cells in blood. These numbers have been shown to correlate to prognosis and treatment efficacy. Advancements in genetic analysis have also made it possible to use these cells to inform treatment decisions. The high price of systems such as CellSearch® and the CTC-iChip mean that most blood samples must be shipped to a distant testing site before CTCs can be isolated from the blood and analyzed. Also, while the current preservative used to maintain these cells during shipping does an excellent job preserving the number of CTCs in samples, it cannot preserve the nucleic acids sufficiently. A possible candidate for a next generation preservative is discussed which shows better RNA preservation than any current preservative in Agilent Bioanalyzer® and QPCR experiments. This preservative, whose formulation is confidential, also showed promise in cellular preservation in another study, but has mild issues with blood hemolysis.

Epigenetic down-regulation of *snxA*Hrb1 rescues G2-M cell cycle defects (Musical)**Student(s):**

Lorela Ciraku

Mentor(s):

Steven James

Time/Location:

4:00pm - 5:15pm

Science Center 2 and 3

Lobby

At the G2/M transition, eukaryotic cells enter the mitotic phase of the cell cycle by condensing chromosomes and reorganizing the microtubular cytoskeleton to form a spindle apparatus. These events are driven by the activation of the *cdc2*/cyclin B kinase (CDK1) whose localization to the nucleus governs many of the structural changes that occur at G2/M. Heat-sensitive mutations in the *Aspergillus nidulans* *nimXcdc2* and *nimE*cyclinB proteins arrest the cell cycle in late G2 phase and thus prevent mitotic entry at the non-permissive temperature of 42°C. To identify genes that interact with *nimXcdc2*, extragenic suppressors of the *nimX2F233L* allele were generated. Two mutations in the *snxA* gene, *snxA1* and *snxA2* (suppressor-of-*nimX*), suppress the heat sensitivity of the *nimX2cdc2* mutant, and by themselves confer a cold-sensitive G1 phase arrest (McGuire et al., 2000). *snxA* is the *Saccharomyces cerevisiae* ortholog of Hrb1, a nucleocytoplasmic shuttling mRNA binding protein belonging to the serine-arginine Rich (SR) protein family. Surprisingly, no DNA mutations occur in *snxA1* and *snxA2* coding regions, nor were mutations found in the 5' and 3' regulatory regions. Furthermore, we discovered that non-overlapping DNA fragments covering different portions of the 5' regulatory region were able to complement, or partially complement *snxA1* and *snxA2* cold-sensitivity. Finally, deletion of the *cclABre2*/*Ash2* H3K4 methyltransferase, an epigenetic activator of gene expression, strongly enhanced the cold-sensitive growth defects of *snxA1* and *snxA2*. Together, these observations suggest that epigenetic chromatin modifications in the 5' regulatory region may repress *snxA* expression and account for the *snxA1* and *snxA2* loss-of-function phenotypes. Consistent with this idea, *snxA* protein levels were reduced dramatically in *snxA1* and *snxA2* mutants. In summary, we have discovered a novel G2/M inhibitory mechanism, acting through *snxA*Hrb1, in which *snxA* down-regulation appears to result

Fluorescence microscopic investigation of the *Aspergillus nidulans* double-strand break processing protein, *scaANbs1*. (Poster)

<u>Student(s):</u>	<u>Mentor(s):</u>	<u>Time/Location:</u>
Crystal Williamson, Jessica Schulze	Steven James	4:00pm - 5:15pm Science Center 2 and 3 Lobby

Abstract: The MRN complex, made up of Mre11/Rad50/Nbs1, is found in all eukaryotic cells, where it detects and regulates double strand breaks (DSBs) in DNA, and thwarts apoptosis in actively dividing cells. The ortholog of Nbs1 in *Aspergillus nidulans* is *scaA*. This particular gene in the MRN complex is crucial in detecting DSBs and activating the MRN complex. In this study we aim to determine if *scaA* interacts genetically with *snoARif1*, a DSB repair protein, in responding to DSBs. Thus far, we have constructed single mutant ζ *scaA* and double mutant ζ *scaA* *snoA31* strains tagged with GFP-tubulin and histone H1-mCHERRY. These will enable visualization of microtubules and nuclei, respectively, and will thereby facilitate study of nuclear morphology and cell cycle dynamics in the mutants. We have shown that ζ *scaA* and ζ *scaA* *snoA31* mutants are highly sensitive to DNA damage agents, including the DSB-inducing agents camptothecin (CPT) and diepoxyoctane (DEO), the DNA replication inhibitor hydroxyurea (HU), and the DNA methylating agent methylmethane sulfonate (MMS). Moreover, it appears that loss of *snoA* function (*snoA31*) improves the viability and spore production of ζ *scaA*, suggesting that *snoARif1* may normally act to restrain or oppose the function of *scaANbs1*. In a preliminary mutagenesis experiment, the induced mutation frequency of ζ *scaA* *snoA31* was approximately 1.5-fold lower than the wild-type control. Surprisingly, the induced mutation frequency of ζ *scaA* was approximately 100-fold lower than the wild-type control. In the remainder of this study, fluorescence microscopy will be used to assess checkpoint and cell cycle defects in the single and double mutants. As a means to quantify the improved growth and viability of ζ *scaA* in cells lacking *snoA*, we will attempt to measure cell cycle length and rate of cell elongation in single and double mutants.

Identification of R-Spondin Fusions in Cancer (Poster)

<u>Student(s):</u>	<u>Mentor(s):</u>	<u>Time/Location:</u>
Joseph Portale	Steven James	4:00pm - 5:15pm Science Center 2 and 3 Lobby

Autocrine WNT signaling has been recorded in Non-Small Cell Lung Cancer (NSCLC), in addition to many other cancers. A small family of secreted growth factors, the R-spondin (RSPO) family, has the ability to activate β -catenin signaling and enhance WNT-mediated β -catenin activation. It has been previously reported that gene fusions involving two of the RSPO family members, RSPO2 and RSPO3, are present in about 10% of colon tumors, and are mutually exclusive with other WNT pathway genetic mutations. In this study, the presence of three RSPO fusion transcripts was measured using qRT-PCR methods with samples isolated from formalin-fixed paraffin embedded (FFPE) tissue samples. RSPO fusions were detected in about 7% of colorectal cancers, 2% of NSCLC, 2% of head and neck cancers, and 9% of esophageal cancers. These observations suggest an important role of dysregulated WNT- β -catenin signaling, which can drive the development of these cancer types.

Interaction of ζ chkAChk1 with a DNA-damage sensitive snoARif1 mutation in *Aspergillus nidulans*. (Poster)**Student(s):****Eric Yurko, Nathan Wojick****Mentor(s):****Steven James****Time/Location:****4:00pm - 5:15pm****Science Center 2 and 3
Lobby**

The chkAChk1 kinase functions as an intermediate in a signal transduction pathway that responds to many different types of DNA damage such as UV light, virus transduction, and DNA replication inhibition. When activated by phosphorylation, it halts the cell cycle until the damage is repaired. Activated chkAChk1 delays cell cycle progression by phosphorylating and inactivating proteins that normally trigger the G1/S or G2/M transitions of the cell cycle. We have found that ζ chkA is sensitive to the interstrand crosslinking agent diepoxyoctane (DEO) and the DNA replication inhibitor hydroxyurea (HU). The Rif1 gene in eukaryotes regulates the timing of DNA replication, and plays an important role in DNA damage response (DDR), especially in the induction and repair of double-strand breaks (DSBs). Loss of snoARif1 in *Aspergillus nidulans* rescues the DNA damage sensitivity and temperature sensitivity of mutations in the nimODbf4-cdc7 initiator of DNA synthesis, suggesting that snoARif1 normally acts through nimODbf4 to restrain DNA synthesis. Moreover, snoARif1 appears to act as a molecular switch controlling the response to DSBs, because non-phosphorylatable mutants lacking three C-terminal SSPP motifs (snoA::AA3x) confer sensitivity to diepoxyoctane (DEO). To test the behavior of these two mutations when interacting with each other, three separate strains of *Aspergillus* were constructed, one containing ζ chkA, one containing snoA::AA3x, and one containing both mutations. Histone HI::mCHERRY and GFP::tubulin genes were also incorporated into the genome of each strain in order to facilitate a fluorescence microscopic study of nuclear and cell cycle dynamics. In a preliminary study of mutability, the induced mutation frequency of ζ chkA was similar to the control. However, the ζ chkA snoA::AA3x double mutant exhibited a nearly two-fold increased mutation frequency. In the remainder of this study, fluorescence microscopy will be used to assess checkpoint and cell cycle

Nuclear morphology and microtubule dynamics of a deletion of the double stranded DNA damage repair gene: Rad54 in *Aspergillus nidulans*. (Poster)

<u>Student(s):</u>	<u>Mentor(s):</u>	<u>Time/Location:</u>
Annamaria Capobianchi, Julia Harper	Steven James	4:00pm - 5:15pm Science Center 2 and 3 Lobby

The Rad54 gene plays a vital role in homologous recombination during DNA repair of double-strand breaks (DSBs) in chromosomes. Rad54 is a DNA helicase that moves along the DNA, creating displacement loops (D-Loops) that facilitate strand exchange between damaged and intact DNA strands during DNA repair by homologous recombination. The Rad51 protein intensifies the function of Rad54 to stabilize the DNA D-Loops. In this study we aim to determine if *Aspergillus nidulans* rad54 interacts genetically with snoARif1, a DSB repair protein, in responding to DSBs. We constructed single mutant ζ rad54 and double mutant ζ rad54 snoA31 strains tagged with GFP-tubulin and histone H1-mCherry. These will enable visualization of microtubules and nuclei, respectively, and will thereby facilitate study of nuclear morphology and cell cycle dynamics in the mutants. In a preliminary mutagenesis experiment, the spontaneous mutation frequencies of ζ rad54 and ζ rad54 snoA31 were approximately 10-fold higher than the wild-type control, demonstrating that Rad54 does play a significant role in DNA damage repair. Interestingly, however, the induced mutation frequencies were similar to each other. We showed that ζ rad54 and ζ rad54 snoA31 mutants were highly sensitive to a variety of DNA damage agents, including the DNA replication inhibitor hydroxyurea (HU), the DNA methylating agent methylmethane sulfonate (MMS), and the double-strand break-inducing agents diepoxyoctane (DEO) and camptothecin (CPT). In the remainder of this study, fluorescence microscopy will be used to examine the effects of the Rad54 and snoA mutants on nuclear morphology and microtubule dynamics during the cell cycle.

Pavlos, Katherine and Valente, Laura. Analysis of genetic interactions between gen1 and nimODbf4 in Aspergillus nidulans. (Poster)

Student(s):**Katherine Pavlos, Laura Valente****Mentor(s):****Steven James****Time/Location:****4:00pm - 5:15pm****Science Center 2 and 3
Lobby**

Abstract: Chromosomal breaks, also known as double strand breaks (DSBs), are the most dangerous form of genetic injury. Cells use many mechanisms to recognize and repair these breaks. gen1 is a centrosome-associated protein responsible for repairing these DNA double strand breaks. Depletion of gen1 (Δ gen1) results in abnormal centrosome numbers. Centrosomes function in making spindle poles and therefore an abnormality in centrosome numbers could result in multiple spindle poles, and multiple spindle apparatuses, formed in mitosis. As a consequence, loss of gen1 also results in higher instances of apoptosis, programmed cell death, and spontaneous DNA damage. gen1 functions as a Holliday Junction resolvase in the repair double strand breaks via homologous recombination (HR). Holliday junctions are covalent interchromosomal linkages formed by crossing over during HR repair; these four-stranded covalent linkages between sister chromatids must be broken in order to re-form into two individual DNA duplexes. gen1 resolves these HJs by a dual incision mechanism on two of the four strands at a Holliday Junction. Thus far, we have constructed Δ gen1 strains tagged with GFP-tubulin and histone H1-mCHERRY. These will enable visualization of microtubules and nuclei, respectively, and will thereby facilitate study of nuclear morphology and cell cycle dynamics in the mutants. Of DNA damage agents tested, Δ gen1 mutants showed a high sensitivity only to the interstrand cross-linking agent, diepoxyoctane (DEO). In a preliminary mutagenesis experiment, the induced mutation frequency of Δ gen1 was decreased 2.5-fold relative to the control. Surprisingly, we were unable to recover double mutants carrying Δ gen1 and mutations in the nimODbf4 initiator of DNA synthesis. In the remainder of this study, we will use genetic methods to rigorously test the possibility that Δ gen1 is synthetically lethal with mutations in nimODbf4. We will also use fluorescence microscopy to examine nucle

Civil War Era Studies

From Contraband to Freedom: African Americans' Struggle for Housing Opportunities in DC Metropolitan Area (Panel)

Student(s):

Logan Tapscott

Mentor(s):

Jill Opline Titus

Time/Location:

4:00pm - 5:15pm
Science Center 153

Throughout the Civil War, slaves escaped into Washington City and other federal occupied territories within the capital, seeking a new beginning. Besides jobs, African Americans sought suitable housing conditions. They continued to seek suitable living conditions during the Reconstruction period. Despite federal involvement in establishing contraband camps in and within the capital, including Freedman's Village, former slaves struggled to live in humane housings. This paper explores the various housing opportunities in present day Washington Metropolitan area while explaining the struggles with the federal government that organized the housing system.

Computer Science

Analyzing and Predicting Pitcher's ERA (Poster)

Student(s):

Michael Kielbasa

Mentor(s):

Ross Gore

Time/Location:

4:00pm - 5:15pm

Science Center 2 and 3
Lobby

Baseball is a data driven game. Players and decision-makers judge offensive and defensive abilities using a variety of statistics. A common metric for predicting a pitcher's future performance is Earned Run Average (ERA) . ERA summarizes how many runs a pitcher surrenders on average in a game. However, if a pitcher plays for a great defensive team then his ERA will be lower than if he played for an average or poor defensive team. In recent years, sabermetricians have developed a widely accepted model to eliminate fielding called FIP, which stands for Fielding-Independent Pitching (FIP). FIP predicts a pitcher's ERA based upon the frequency with which he achieves or surrenders strikeouts, walks, hit-by-pitches and home runs. The outcomes of each of these statistics is partially predicated upon the hitter. In this project we extend Fielding-Independent Pitching to Batter-Independent Pitching by modeling pitching performance using only those outcomes a pitcher controls the location, movement and velocity on his pitches. We explore to what extent these previously unmeasured factors improve the accuracy of existing pitching performance models.

Economics

The Dynamic Effects of Government Spending on Output During Periods of Monetary Accommodation (Poster)

Student(s):

Michael McGrane

Mentor(s):

Charles Weise

Time/Location:

4:00pm - 5:15pm

Science Center 2 and 3
Lobby

In this paper I investigate the effects of government spending on U.S. economic activity when monetary policy is accommodative. I use a threshold regression that allows the coefficient on government purchases to switch when monetary policy is accommodative. With these regression results I calculate an impulse response function to analyze the effects of government spending shocks under different degrees of monetary policy accommodation. I find that the effects of a government spending shock on output are significantly larger if the shock occurs when monetary policy is accommodative. This evidence is largely consistent with New Keynesian theories of the effects of fiscal policy when monetary policy is constrained by the zero lower bound.

Environmental Studies

Environmental Studies Senior Honors Thesis Presentations (Panel)

<u>Student(s):</u>	<u>Mentor(s):</u>	<u>Time/Location:</u>
Adrienne Ellis, Alyson Hampsch, Jessie Pierce, Sondra Winders	John Commito Monica Ogra Randall Wilson Sarah Principato	4:00pm - 5:15pm Science Center 300

Environmental Studies Senior Honors Thesis candidates present their year-long research projects.

Adrienne Ellis

Individual Abstract

An Evolution of Landscape and Meaning: The Case of Gettysburg National Military Park

Interpretations of historical events are one of the key missions of the National Park Service, and one that can be inherently bound to management decisions pertaining to the physical landscape. This project traces the history of such decisions at the Gettysburg National Military Park in Gettysburg, Pennsylvania. After exploring major turning points in park management since its creation after the 1863 battle, research gives special attention to the 1999 General Management Plan, including controversial efforts to re-create the landscape of July 1863. Findings speak to the increasing role of collaborative resource management practices among Park Service managers and how these, in conjunction with changes in the physical landscape, are rendering distinctive changes in the way the battle and its meaning is represented to the public.

Alyson Hampsch

Individual Abstract

Using Sedimentology and GIS Analysis to Interpret Paleo-Ice Flow in Northern Iceland

This study uses a Geographic Information System (GIS) and sedimentology analyses to determine paleo-ice flow paths in northern Iceland. Till samples were collected from three regions south of Hunafloi: the valley of Svinadalur, the valley of Vatnsdalur, and the Hrutafjardarhals highlands. A total of 45 samples were analyzed for water content, organic content, magnetic susceptibility, and grain size. The data were statistically analyzed to determine variability by location. There are notable differences in the magnetic susceptibility between the Hrutafjardarhals highlands compared to the valleys of Svinadalur and Vatnsdalur. The samples from Hrutafjardarhals have the highest average mass magnetic susceptibility, 89.56 cgs. The samples from Svinadalur have the lowest mass magnetic susceptibility, 69.63 cgs. The samples from Vatnsdalur have an average mass magnetic susceptibility of 71.28 cgs. Loss-on-ignition measurements indicate low organic carbon content for all samples. Water content ranges from 6.36% to 7.79%, and variability is related to modern climate conditions. ArcGIS and ENVI were used to quantify characteristics of streamlined landforms, using a digital elevation model (DEM), aerial photographs, and satellite data. GIS analyses of streamlined landforms in the study area include measurements of length, width, elongation ratio, orientation, density, and packing. Over 100 drumlins have been identified in the Svinadalur valley. Additional analyses are in progress.

Jessie Pierce

Individual Abstract

Burning With Purpose: An Assessment of the Ethanol-Fueled CleanCook Stove as a Potential Sustainable Cooking Alternative in the Village of Gaindikhatta, Uttarakhand, India

There are many health-, gender-, and environment-related issues associated with the use of cookstoves that run on biomass (fuelwood, dried animal dung, charcoal, and other combustible raw materials). Indoor air pollution (of which biomass smoke is one form) is responsible for approximately 1 billion premature deaths each year; such deaths are most commonly among women and children; additionally, black carbon, a byproduct of biomass smoke, is a potent agent of climate change. Despite these problems, approximately 3 billion households worldwide still use biomass cookstoves. Because of this, Project Gaia, Inc. (PGI), an Gettysburg, PA-based NGO, focuses its efforts on introducing clean-burning ethanol-fueled stoves into communities in developing countries. This study represents the NGO's first preliminary pilot study in the Indian village of Gaindikhatta, Uttarakhand. It seeks to identify potential implementation barriers and entry points for a PGI project in the Indian village of Gaindikhatta, Uttarakhand via an analysis of cultural acceptability of project components, household hierarchies, and community power relations. Several main implementation barriers are found, most relating to power discrepancies either at the community or household level: those in most need of a cookstove intervention (i.e. poor women) are also those with the least agency to achieve one. In order to turn such uneven power relations into entry points, a PGI project would have to be carefully designed to include all demographics and to increase social capital between groups. In this way, project barriers could be turned into opportunities.

Sondra Winders

Individual Abstract

Wind forcing of sediment flux and post-larval transport in a patchy, biogenically structured intertidal system

The blue mussel (*Mytilus edulis*) is a soft-bottom ecosystem engineer influencing sediment and ambient community dynamics. Mussel beds, however, are not composed solely of live mussels. Four mussel bed cover types were identified in a Maine mussel bed: bare sediment, live mussels, whole shells, and fragmented shells. GIS analysis of the areal extent of each cover type revealed the live mussels covered only 1% of the study site, while bare sediment covered 65% and shell hash (whole shell and fragmented shell) covered 34%. Bottom traps were deployed to measure sediment flux, and absolute, relative, and bulk dispersal rates of macrofauna and meiofauna. Wind direction and wind velocity data were plotted using wind roses. Sediment flux and animal dispersal varied significantly across cover types and wind condition. While most studies focus only on live mussels as ecosystem engineers, this study demonstrates that to understand the important role mussels play in carbon sequestration and storm-surge protection, more attention must be paid to the biogenically structured cover types within bivalve beds and their effects on ecosystem processes.

French

Meurtres à Paris: Digital Mapping of Space in French Detective Fiction (Maigret) (Panel)

<u>Student(s):</u>	<u>Mentor(s):</u>	<u>Time/Location:</u>
Alyssa MacNeill, Grace Madland, Laura Pulver, Maura Magistrali	Florence Journey	4:00pm - 5:15pm Science Center 2 and 3 Lobby

The detective novel has had a very important cultural impact on French society, giving birth to a variety of trends within the genre. The detective novel is a literary genre based in reality, using spatial markings that are seemingly real. These markings are, however, transformed to respond to the needs of the fiction thus altering the reader's perception of the characters and the space they evolve in. How do these disconnections between fiction and reality affect the reader's experience? What happens when a real map of fictional events is drawn and given to the reader? In this presentation, we will analyze the realistic and fictitious representations of space in Geroges Simenon's novel *Maigret et l'homme tout seul* (Maigret and the Loner). In order to do so, photos were taken in Paris, where the novel was set, and then set to a Google Map of Paris to compare the actual city of Paris with Simenon's perception of the city in his fictitious novel.

Meurtres à Paris: Digital Mapping of Space in French Detective Fiction (Poster)

<u>Student(s):</u>	<u>Mentor(s):</u>	<u>Time/Location:</u>
Ashley Tedrick, Gina Abraham, Joshua Griffiths, Samuel Schwarz	Florence Journey	4:00pm - 5:15pm Science Center 2 and 3 Lobby

The detective novel has had a very important cultural impact on French society, giving birth to a variety of trends within the genre. The detective novel is a literary genre based in reality, using spatial markings that are seemingly real. These markings are, however, transformed to respond to the needs of the fiction thus altering the reader's perception of the characters and the space they evolve in. How do these disconnections between fiction and reality affect the reader's experience? What happens when a real map of fictional events is drawn and given to the reader? In this presentation, we will analyze the realistic and fictitious representations of space in Leo Malet's graphic novel *Brouillard au Pont de Tolbiac* (Fog on the Tolbiac Bridge). In order to do so, photos were taken in Paris, where the novel was set, and then set to a Google Map of Paris to compare the actual city of Paris with Malet's perception of the city in his fictitious novel.

Health Sciences

A Physiological Investigation of Elliptical Road Cycling as Compared to Traditional Cycling at Three Constant Workloads (Poster)

Student(s):

Elizabeth Kuhn, Stephen Patrick

Mentor(s):

Daniel Drury

Time/Location:

4:00pm - 5:15pm

Science Center 2 and 3
Lobby

Introduction: Elliptical exercise machines have been available on the fitness market for decades. These machines provide numerous advantages over other forms of exercise and these benefits have been well documented in the literature. Recently, a new elliptical road cycle has been introduced to the market. This machine allows the user to ride outdoors by propelling the machine with an elliptical cycling movement of the lower body. To our knowledge, no data currently exists regarding the metabolic efficiency of this machine. Purpose: The purpose of this investigation was to provide some baseline physiological data regarding the metabolic and cardiovascular responses of Elliptical Cycling (EC) vs. Traditional Cycling (TC). Methods: A total of 10 recreationally trained college-aged males volunteered to exercise for a total of 15 minutes at three different 5 minute predetermined workloads (50W, 100W, 150W) using EC or TC. Metabolic and circulatory data were collected at the conclusion of each stage using a metabolic cart and sphygmomanometer. Finally, subjects were asked to rate their perceived effort at the conclusion of each stage using a standard RPE scale. Data points collected included measures of: heart rate, oxygen consumption, caloric expenditure, respiratory exchange ratio, ventilation rate, rate of perceived exertion, systolic blood pressure and diastolic blood pressure. Data were analyzed using a standard repeated measures T-test to determine differences among means between the two exercise conditions. An a priori level of significance was set at $p < 0.05$. Results: The data collection for this investigation is currently underway and will be complete by the end of the spring semester of 2014.

Gettysburg Family Practice: Health Sciences Summer Capstone (Poster)

Student(s):

Christina Casillo

Mentor(s):

David Petrie

Time/Location:

4:00pm - 5:15pm

**Science Center 2 and 3
Lobby**

My Health Sciences capstone was completed at Gettysburg Family Practice under the supervision of Dr. Dwight Michael, M.D., and Jennifer Roth, PA-C. I was able to shadow both of these medical providers simultaneously and learned the importance of teamwork in the primary care setting. I chose this internship site to learn more about the integral role of the physician assistant in the healthcare system. This experience taught me more than I ever could have expected. In no way did it drive me away from the medical field. It made me gain a passion for helping people and taught me how to apply my previous medical knowledge to real-life examples. My supervisors are wonderful medical providers and deserve all the praise they receive. They were great teachers who taught me about medicine, controversies, healthcare, employers, their home lives, and their professions in general. This experience helped me decide to apply to physician assistant school in the hopes of being a vital part of the health care team to educate, treat, and empower patients.

The Effects of *Cissus quadrangularis* on Body Composition and Blood Lipids in Healthy College-aged Males and Females (Poster)

Student(s):

Cara Pietrolungo, David Gilmore

Mentor(s):

Eric Noreen

Time/Location:

4:00pm - 5:15pm

**Science Center 2 and 3
Lobby**

Cissus quadrangularis is a plant native to India and Africa. Recent research has shown its effectiveness as a supplement in reducing body fat and improving blood lipids in obese individuals, however it is not clear if these effects exist for non-obese individuals.

PURPOSE: To evaluate the effects of *Cissus quadrangularis*, on body composition and blood lipids in healthy, non-obese college-aged males and females.

METHODS: 17 females and 13 males (21.5 ± 0.8 y, 24.0 ± 2.7 BMI; mean \pm SD) participated in the study. Participants had a BMI < 30; were not taking any medications other than birth control pills and allergy/asthma medications; and abstained from the use of recreational drugs. Body composition (body mass, fat mass, fat free mass, body fat percent) was determined using air displacement plethysmography via the BodPod®. Blood lipids (total cholesterol, triglycerides, HDL & LDL cholesterol, fasting blood glucose) were measured using the Alere Cholestech LDX. All testing was performed in the morning following an overnight fast. Subjects were then randomly assigned in a double blind manner to either placebo or *Cissus quadrangularis*. The *Cissus quadrangularis* was standardized for 20% ketosterones. Subjects were instructed to take two capsules (800mg each) before the morning and evening meals for 6 weeks. Participants were instructed not to alter diet and exercise habits, or make any major lifestyle modifications during the 6-week treatment period. All testing was repeated following the 6-week treatment period.

RESULTS:

Results will be presented.

Using Photovoice for cross-cultural exchanges exploring global food issues in a local community (Poster)

Student(s):

Helena Yang

Mentor(s):

Amy Dailey

Time/Location:

4:00pm - 5:15pm

**Science Center 2 and 3
Lobby**

Purpose and Significance: Each person has the right to a standard of living; an integral part being food accessibility. The Adams County Food Policy Council (ACFPC) envisions that all residents of Adams County will have access to a safe, nutritious, affordable and adequate food supply within a sustainable system which promotes the local economy.

Methods: The ACFPC developed a farmers' market food voucher and health education program to help food-insecure families, ineligible for government assistance, to supplement food needs in healthful ways. A large number of participating families were migrant or immigrant families, given the agricultural employment opportunities in our community. Photovoice, a community-based participatory research method, was used to evaluate the program and to explore cross-cultural exchanges around challenges faced by the families of Spanish-speaking and English-speaking participants.

Results: The use of photography to document participants' experience with food acted as the basis of the discussion. Pictures taken and discussed were primarily of family members, highlighting the importance of family influence in shaping health habits, which is often challenged by the appeal of colorful and fun food marketing, illustrated by pictures of packaged foods and restaurants.

Implications: The cross-cultural dialogue facilitated by Photovoice discussions provided a venue for participants to actively voice their experiences with providing healthy food for their families, leading to new ideas for achieving food security. Sharing successes and challenges built relationships and helps reinforce accountability to act as role models in their families and in other community programs like Photovoice and ACFPC.

Mathematics

On the Size of Spanning Sets in Cyclic Groups (Poster)

Student(s):

Ryan Day

Mentor(s):

Bela Bajnok

Time/Location:

4:00pm - 5:15pm

Science Center 2 and 3
Lobby

Additive combinatorics is a relatively new field of research in mathematics. One question of particular interest in additive combinatorics is how large a sumset can be in a given cyclic group. Given a subset A of a cyclic group, and a positive integer s , we say that the sumset generated by A corresponding to s is the set whose elements are sums of up to s distinct elements of A . If a sumset yields the entire group, then it has reached its maximum size, and the corresponding subset A is called a spanning set. This presentation will focus on spanning sets. In particular, it will focus on how small a subset A of a cyclic group can be while still spanning that group. It will display previously known results regarding spanning set as well as some new results that have been developed.

Understanding the Dynamics of Child Sleep through Mathematical Modeling: Connections between Early Sleep Patterns and Brain Maturation in Toddler and Preschool Children (Poster)

Student(s):

Aleksandra Petkova

Mentor(s):

Kimberly Spayd

Time/Location:

4:00pm - 5:15pm

**Science Center 2 and 3
Lobby**

We have known for a long time now that the sleep behavior of humans is highly dependent on a variety of intrinsic (e.g. body temperature, melatonin secretion) and extrinsic (e.g. light input) factors. Empirical research has established that the two most important mechanisms underlying sleep regulation are the homeostatic and the circadian processes. The homeostatic process governs the increase of sleep propensity during wake time and the dissipation of sleep propensity during sleep. The circadian process is a clockwise mechanism that is independent of the duration and timing of prior sleep. The circadian process is influenced by the 24-hour environmental cues that humans are exposed to (namely, light-dark cycles). Additionally, the homeostatic and circadian processes interact with each other in order to regulate the timing and duration of sleep. The interactions between the homeostatic and circadian rhythms are formally referred to as the two-process model. The two-process model was derived in the early 1970s when sleep researchers first studied the dynamics of electroencephalography (EEG) brain signals during sleep.

Since the experimental discovery of the two-process model, applied mathematicians have become engaged in the study of sleep and, in particular, in attempting to further untangle the physiological processes that govern sleep. For example, early work by Babloyantz and Salazar (1985) studied brain activity during sleep cycle in the context of chaotic dynamics. Similarly, Roschke, Fell, and Beckmann (1985) examined the hypothesis that the recorded EEG signals during sleep establish a nonlinear dynamical system. Such findings indicate that the brain's dynamic activity during sleep can indeed be better understood with the introduction of nonlinear dynamic systems. In more recent years, a number of differential equations-based mathematical models have been built to study the physiology of sleep on the neuronal level (Gleit, Diniz Behn, Booth, 2013).

The curren

Organization and Management Studies

Predictors of Family and Work Enrichment (Poster)

Student(s):

Victoria Biegel

Mentor(s):

Heather Odle-Dusseau

Time/Location:

4:00pm - 5:15pm

Science Center 2 and 3
Lobby

Research regarding enrichment across the work and family domains has grown recently in order to examine how positive spillover can occur between the two. Formal policies may be implemented in the workplace to encourage enrichment, but past research has shown that informal support in the workplace is what truly initiates work-to-family enrichment (WFE). Based off of these results, I hypothesized that family-to-work enrichment (FWE) is more likely to occur from informal emotional family support, while instrumental supports in the family domain will marginally predict enrichment similar to formal supervisor support. This model also predicts that individual characteristics predict enrichment across domains. According to the theoretical framework proposed by Greenhaus and Powll (2006), employees with higher extraversion, open-mindedness, and conscientiousness were predicted to experience more WFE because these are positively associated with higher involvement and commitment with both work and family roles. This model focuses on individuals' dispositions and perceptions of support across work and family to predict WFE and FWE.

Physics

Behind the Eclipse: Observations of the Eclipsing Binary System EU Pegasi (Poster)

<u>Student(s):</u>	<u>Mentor(s):</u>	<u>Time/Location:</u>
Caitlin Hay	Ryan Johnson	4:00pm - 5:15pm Science Center 2 and 3 Lobby

Eclipsing binary star systems vary in apparent magnitude through their periods. By photographing an eclipsing binary over several nights, one can plot its apparent magnitude over its period, creating a light curve. Various orbital properties of the eclipsing binary can be derived from the light curve of a star, as well as properties of the stars themselves.

Conductivity of Electrospun Poly(ethylene oxide) Nanofibers Doped with Single Walled Carbon Nanotubes for use in Cell Regeneration Scaffolds and Biosensors (Poster)

<u>Student(s):</u>	<u>Mentor(s):</u>	<u>Time/Location:</u>
Lauren Nowicki	Kurt Andresen	4:00pm - 5:15pm Science Center 2 and 3 Lobby

Polymer nanofibers have various applications in science such as biosensors and cell regeneration scaffolds. An important property of these fibers is their electrical conductivity. The fibers used in this project contained single walled carbon nanotubes (SWCNTs), which act as conductors. The substrate consisted of poly(ethylene oxide) in water to which 0 g/L to 10 g/L of SWCNTs were added. The substrate was electrospun and the conductivity was measured using a Keithley picoammeter. Experimental results determined that the conductivity of the fibers ranged from 0.3 +/- 0.1 S/m to 2.0 +/- 0.3 S/m.

Radiation in Soil (Poster)**Student(s):****Asnika Bajracharya****Mentor(s):****Bret Crawford****Time/Location:****4:00pm - 5:15pm****Science Center 2 and 3
Lobby**

One of the major sources of radioactivity in soil, apart from the naturally found radioactive nuclides, is due to the excessive use of fertilizers. The primary goal of this study is to measure and compare the activity concentration of radioactive isotopes in soil that has been fertilized using organic and non-organic fertilizer. Soil samples will be collected from local farms and different areas around campus such as Painted Turtle farm and outside Glatfelter. Gamma spectroscopy will be used to analyze the soil samples for radioactive isotopes such as Potassium-40, Radium-226, and Thorium-232. A High Purity Germanium (HPGe) detector will be used to detect low-level gamma radiation from the sample. In addition, the secondary goal of this study is to develop a computer simulation in MATLAB to compare the experimental and theoretical value for the solid angle and efficiency of the HPGe detector.

Star Spot Photometry: Rotational Periods in NGC 6811 (Poster)**Student(s):****Ryan McCabe****Mentor(s):****Jacquelynne Milingo****Time/Location:****4:00pm - 5:15pm****Science Center 2 and 3
Lobby**

We have determined the rotational period of eight stars in the NGC 6811 open cluster by conducting V, I, B, and R filter differential photometry on data taken at the Gettysburg College Observatory and the National Undergraduate Research Observatory in Flagstaff Arizona. The determined rotational periods range from approximately 0.5 days to 4 days. These stars display rotational modulation in brightness due to sunspots on their surfaces that arise due to magnetic activity within. An underlying periodic pattern emerged despite large uncertainties. This research informs us of the magnetic activity and the radiation environment of stars similar to our sun.

Psychology

Mindfulness and Grief Related Ruminating Thought (Poster)

<u>Student(s):</u>	<u>Mentor(s):</u>	<u>Time/Location:</u>
Christina Soma	Kathy Berenson	4:00pm - 5:15pm Science Center 2 and 3 Lobby

Mindfulness is the practice of living intentionally, being aware of the present moment, and creating an atmosphere of acceptance of one's thoughts. During an experience of personal loss, such as the death of a loved one, loss of a romantic relationship or friendship, or the loss of a pet, often people do not have the emotional tools to process their thoughts, and may be judgmental towards their thoughts. We aimed to investigate the effects of mindfulness on ruminating thought that could have been perpetuated by the grief of significant loss, experienced within the past year. We hypothesized that those participants who completed a mindfulness breathing exercise for six days would have less distressing rumination than those who did not complete the exercise.

Power Postures and Action (Poster)

<u>Student(s):</u>	<u>Mentor(s):</u>	<u>Time/Location:</u>
Cymone Card, Victoria Biegel	Rebecca Fincher-Kiefer	4:00pm - 5:15pm Science Center 2 and 3 Lobby

Research has shown that when a person is in an expansive posture they are embodying a dominant role, which induces power behaviors such as taking action in risky situations, while an individual taking up little space in a constricted pose takes on a submissive role (Zajonc & Markus, 1984). Tiedens and Fragale (2003) further found that opposing body postures between two individuals increases liking; participants are more comfortable when their posture is complimented versus when their posture is mimicked. In the current study, we had participants assume either an expanded power posture of constricted submissive posture, while also manipulating whether or not the experimenter held the same or opposing posture. We predicted that participants in a power position and having the experimenter complement their pose would take more action in gambling tasks and hypothetical situations than if being mimicked by the experimenter. However, if the participant were in a constricted powerless pose, there would be no difference in action taken whether their posture was mimicked or complimented. Experiment 1's results showed marginal support for our hypotheses as participants in expansive postures tended to take more action than those in constrictive postures. Experiment 2 further investigated our hypothesis by altering the action scenarios, and making the experimenter posture more apparent to participants.

Safe and Sound: The Effect of Security on Negative Stereotypes and the Self (Poster)

<u>Student(s):</u>	<u>Mentor(s):</u>	<u>Time/Location:</u>
Jill Duranko	Paul D'Agostino	4:00pm - 5:15pm Science Center 2 and 3 Lobby

Much research has been done surrounding the topic of stereotypes. Stereotypes are ever-present and have the power to affect not only thought and action but to change the concept of self, especially when the stereotype is negative. When is this more likely to occur? Through a variety of manipulations this study sought to understand under what conditions people are more likely to change their view of self to align with the negative aspects of a stereotype. This particular study focused on the stereotype of the elderly, hypothesizing that individuals who were primed with secure attachment words would be more likely to associate themselves, in behavior and in thought, with a negative elderly stereotype than those who were not. Implications of the study's findings are discussed

The Effect of Body Scaling and the Mental Number Line on Tall and Short Quantitative Judgments (Poster)

<u>Student(s):</u>	<u>Mentor(s):</u>	<u>Time/Location:</u>
Kayla Grieco, Lindsay Komsa	Rebecca Fincher-Kiefer	4:00pm - 5:15pm Science Center 2 and 3 Lobby

Previous research suggests that people implicitly use a mental number line, with larger numbers on the right and smaller numbers on the left, when judging size, and because of this, leaning to the left yields smaller size estimates than leaning to the right (Eerland, Guadalupe, & Zwaan, 2011). Previous research also shows that people use their bodies as a scaling tool when judging the size of different objects (Proffitt, 2013; Linkenauger, Ramenzni & Proffitt, 2010). In the current study participants were separated by height, being either short or tall, and were asked to judge the size of various objects while leaning to either the left or the right. We predicted that participants would use their entire body as a scale when making judgments, so tall participants would estimate all objects as taller when leaning to the right rather than to the left, whereas short participants would estimate all objects as taller, regardless of leaning, because short participants know they would exert more energy to physically climb these objects. In Experiment 1, an interaction was found between leaning direction and participant height, such that when leaning to the left, both tall and short participants judged the height of objects (two rock-climbing walls and two plyometric platforms) similarly, but when leaning to the right, tall participants had a significantly smaller difference between the platform height judgments than short participants. In Experiment 2, participants were either tall or short and made judgments of height when leaning to the right or to the left, but they were asked for judgments of height that are more often made in everyday judgments – of other individuals.

The Effect of Isolation and 5HT1A Receptor Partial Agonist on Anxiety in Sprague-Dawley Rats (Poster)**Student(s):****Emily Hall, Grace Van Scoyk****Mentor(s):****Stephen Siviyy****Time/Location:****4:00pm - 5:15pm****Science Center 2 and 3
Lobby**

Previous research has shown inconsistent findings on whether 5HT1A partial agonist Buspirone has anxiolytic or anxiogenic effects. It has also been shown that isolation is a good model for inducing anxiety in rats because isolated rats exhibit more anxious behavior, therefore this has been used as a standard model for assessing anxiety in rodents. The following study attempts to analyze the effect of isolation housing and Buspirone administration on anxiety indicated by behavior in the elevated plus maze. Our hypothesis is that isolated rats in the control condition will be more anxious than isolated rats administered Buspirone; however, socially housed control rats will be more anxious than socially housed rats administered Buspirone. Thus, isolation alone will induce anxiety, but the effect of Buspirone will have a greater anxiolytic effect in the isolated rats than the socially housed rats.

The Effect of Isolation Rearing and Cat Odor in Wistar Rats (Poster)**Student(s):****Aimee Becker, Monica Doring****Mentor(s):****Stephen Siviyy****Time/Location:****4:00pm - 5:15pm****Science Center 2 and 3
Lobby**

The current study explored the relationship between the housing condition and cat odor on anxiety levels in the elevated plus maze and in the open field test. Previous research suggests that when exposed to cat odor, rats demonstrate less time spent in the open arms of an elevated plus maze and less time in the center of an open field test, indicating an elevated level of anxiety. We predicted that rats housed in isolation should show less time in the open arms and less distance traveled than the socially housed; however, the effect would increase when the isolates were exposed to cat odor and have less of an affect for the socially housed rats. We also predicted that the socially housed rats who were exposed to the cat odor would show a decrease in activity than those who were not.

**The Effect of Short-Term Isolation and Morphine on Play Behavior in Sprague-Dawleys
(Poster)**

Student(s):

Brittany Clark, Laura Arnold

Mentor(s):

Stephen Siviyy

Time/Location:

4:00pm - 5:15pm

**Science Center 2 and 3
Lobby**

Rats are very social animals and very playful animals. When rats are put into social isolation the amount of play behavior increases significantly, even if they have only been isolated for a short amount of time. It has also been seen that the opioid systems play a role in play behavior. When rats are given low doses of morphine their social play behavior increases. The present study examined the effects of morphine and isolation on play with Sprague-Dawley rats. Half of the rats received a 1.0 mg/kg dose of morphine and the others received a saline solution. Six pairs of rats were isolated for 4 days and the other six pairs were isolated for 4 hours. After testing they were socially housed again for a day, then the isolation conditions were switched. The play behavior (pinning, wrestling, nape attacks) of the pairs were observed for 10 minutes. In this study it was hypothesized that morphine would cause an increase in play activity and would further amplify the effects of isolation. We predicted the 4 day isolation with morphine would have the most amount of play behavior.

**The Effect of Temperature and Likeability of a Held Beverage on Descriptive Language
About One's Best Friend (Poster)**

Student(s):

Erinn McConville, Marcela Pallete

Mentor(s):

Rebecca Fincher-Kiefer

Time/Location:

4:00pm - 5:15pm

**Science Center 2 and 3
Lobby**

Ijzerman & Semin (2009) found that when holding a warm drink participants used concrete language to describe a video-clip but when holding a cold drink used abstract language. Also, it has been found that those speaking to someone socially close to them use more concrete language when describing a situation while those speaking to someone more socially distant use more abstract language (Jiga-Boy, Clark, & Semin, 2013). In this study, participants were asked to choose ten words that they felt best described their closest friend while holding either a warm or cold drink, and the drink had either positive or negative affect associated with it. We predicted that the effect of drink temperature would be mediated by the affect of the drink. If the drink was positive in affect (e.g., hot chocolate), then when holding both cold and warm drinks, participants should use concrete language to describe their best friend. However if the drink was negative in affect (e.g., prune juice), then only when holding a warm drink should the participant use concrete language (e.g. tall); when holding a cold drink, the participant should use abstract language (e.g. honest). Results of Experiment 1 showed that across all conditions, participants used significantly more abstract than concrete language. Experiment 2 allowed participants to generate their own descriptive words as well as choose from the list of concrete and abstract words provided in order to further test our hypothesis that temperature and affect would significantly affect language used to describe one's best friend.

The Effects of Familiarity and Morphine on Social Approach and Avoidance Behavior in Fischer 344 Rats (Poster)

<u>Student(s):</u>	<u>Mentor(s):</u>	<u>Time/Location:</u>
Jennifer Soroka, Kimberly Houston	Stephen Siviyy	4:00pm - 5:15pm Science Center 2 and 3 Lobby

The effects of familiarity and morphine (5.0 mg/kg) on social approach and avoidance behavior in male Fischer 344 rats were examined. Rats were divided into a variety of conditions to be tested in a 3-chambered approach-avoidance apparatus with a stimulus rat located behind a perforated fiberglass divider: familiar cage-mates with morphine (n=6), familiar cage-mates with saline (n=6), strangers with morphine (n=6) and strangers with saline (n=6). The location of the rat in the chamber, relative to the stimulus rat, was monitored for 10 minutes following a three-minute habituation period. Morphine, a drug mimicking endorphins and acting on opioid receptors to produce feelings of wellbeing, are expected to decrease social anxiety. Thus, rats given morphine are expected to exhibit increased time in social approach compared to their saline counterparts. Due to increased familiarity, rats tested with their cage-mates are also expected to exhibit similar increases. Morphine is predicted to have a differential effect depending on whether the rat is tested with a familiar cage-mate or stranger, resulting in higher time spent in social approach versus avoidance.

The Effects of Hand Cleansing on Luck and Risk Taking. (Poster)

<u>Student(s):</u>	<u>Mentor(s):</u>	<u>Time/Location:</u>
Elizabeth Nagel, Taylor Moscatiello	Rebecca Fincher-Kiefer	4:00pm - 5:15pm Science Center 2 and 3 Lobby

Previous research has shown that activating concepts related to cleanliness can influence moral decisions (Schnall, Benton and Harvey, 2008), and that good or bad luck can be “washed away” (Xu, Zwick, and Schwarz 2012). The current study examined the effects of cleansing, either physically or mentally, on a person’s likelihood to take a risk. Participants first played a rigged guessing game to experience good or bad luck. Participants were then asked to rate a cleansing product by either physically cleaning their hands with the product or imagine using the product in order to rate it on a 5-point scale. After rating the product, participants were asked what they felt their probability of winning the next game would be and if they wanted to take the risk of playing the game again. We predicted that participants who experienced good luck and washed their hands would be less likely to take the risk and would think they had a lower chance of winning; while participants who had experienced bad luck and washed their hands would be more likely to take a risk and think they had more of a chance of winning the game again. Further, we predicted the imagine condition would show reduced effects compared to the actual washing condition. In Experiment 1, participants who washed their hands and were in the lucky scenario showed the expected effect that they did not want to play again compared to the other groups. Experiment 2 attempted to replicate the effects of Experiment 1.

The Lucky Chicken: Examining the Relationship between Superstition and Musical Performance (Poster)

<u>Student(s):</u>	<u>Mentor(s):</u>	<u>Time/Location:</u>
Anne Patterson, Elizabeth Andresen	Rebecca Fincher-Kiefer	4:00pm - 5:15pm Science Center 2 and 3 Lobby

Superstitious beliefs are common among athletes, musicians, and students in performance-based contexts. Previous research has demonstrated that superstition benefits performance outcomes by influencing feelings of perceived self-efficacy and a sense of control over the current situation (Damish, Stoberock, & Mussweiler, 2010). We manipulated the effects of superstition on performance by having participants complete a sight-singing task in which they either sang a “lucky” line or were told nothing about the line that they were singing. We also manipulated “expertise” by allowing half of the participants to prepare the exercise before testing whereas the others participants were not prepared. Overall, we predicted that unprepared participants would be more influenced by superstition, and therefore would perform better when singing the lucky line. We predicted that preparedness, or expertise, moderates the effect of superstition because prepared musicians already feel self-confident, and thus perform just as well with the lucky or normal line to sing. The results of Experiment 1 did not support this prediction, but indicate that expertise had a greater influence on the outcome than luck. We attempted to control the effects of expertise in Experiment 2 so that we could better test our hypothesis and only tested music majors who had more than two semesters of theory experience.

Sociology

Clawing Away at the Complex Web of Tourism Relations in the State of Maine's Lobster Tourism Industry (Poster)

Student(s):

Chad MacLeod

Mentor(s):

Jean Potuchek

Time/Location:

4:00pm - 5:15pm

Science Center 2 and 3
Lobby

As communities around the world are increasingly becoming linked through travel, communications, and commerce, tourism has seemingly created the sense of a closer world. As a result, more intimate interactions among tourism roles are bound to arise. The three most important roles in tourism studies include the tourist, the tourism facility operator, and the local community member. While each of these roles has been considered separately as fixed entities disconnected from one another in daily tourism affairs, what has yet to be considered is how they might in fact be interactive and dynamic entities connected to one another. Using the state of Maine's lobster tourism industry as a case study, this paper attempts to make sense of, and to build on, the current theory in tourism studies by investigating the kinds of persons that actually fill the roles of tourist, tourism facility operator, and local community member, and how those roles interact with, perceive, and impact one another. Participant observation aboard a lobster boat tour in Portland, Maine, and ethnographic interviews with tourists, lobstermen guides, and commercial lobstermen were drawn on. Analysis suggests that each of the primary tourism roles is interactive, flexible, and highly complex. Therefore, there is indeed a strong indication that studying the interactions among tourism roles can be beneficial toward building on existing theory in tourism studies.

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