# ISCAP

## INDEPENDENT SCHOLARSHIP

## &

## CREATIVE ACTIVITIES PRESENTATIONS

May 8, 2013

1865 RIDER UNIVERSITY

RIDER UNIVERSITY

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May 8, 2013

Dear Students, Scholars, Faculty and Families,

Today the Rider University community will hear about the remarkable scholarship, research, and creative endeavors of our students as they apply their college education in innovative ways.

To those students who are presenting their work today, I extend congratulations on your achievements. To all those who supported these students in their academic adventures, I offer appreciation and thanks. These activities exemplify the many valuable opportunities and resources students enjoy at Rider to enrich their learning experience. Frankly, our students could not have done their work without you.

Special congratulations to this year's Undergraduate Research and Scholarship Award winners. These students proposed detailed independent projects to be carried out in the following academic year and will each receive a $5,000 tuition scholarship. You will hear about the wide variety of projects they will be undertaking in the awards session later this afternoon.

Whether you conducted research or helped to make it happen, your efforts send a strong message about the academic excellence students can achieve at Rider. Congratulations to everyone involved!

Sincerely,

Mordechai Rozanski

Provost and Vice President for Academic Affairs
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May 8, 2013

Dear Students, Faculty, and Family Members,

Today is a full day dedicated to honoring and showcasing the creative works and research of Rider University students in collaboration with their faculty mentors. Each year, the Undergraduate Research Scholar Awards (URSA) Committee hosts ISCAP (Independent Scholarship & Creative Activities Presentation) Day in an effort to display student originality and contributions to their fields of interest. ISCAP Day is also meant as a forum for members of the Rider community—both faculty and students—to come together in an interdisciplinary dialogue focused on students' creative projects.

Another very important purpose for ISCAP Day is to announce new URSA scholarship recipients, as well as to hear about the progress made among last year's URSA award winners on their year-long projects. This portion of the day is particularly important as we honor some of the most gifted undergraduates at Rider. We congratulate you on your monumental accomplishment.

Please join us as we celebrate these student achievements and honor their creative works. Congratulations on a job well done!

Sincerely,

Donald A. Steven
Provost and Vice President for Academic Affairs

# ISCAP Day

Wednesday, May 8, 2013

Sweigart Hall

10:30 AM – 3:00 PM

**Schedule-at-a-Glance:**

| | | |
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| **10:30-12:00** | **Panel Session** | Sweigart 115, 117, 118 |
| **12:00-1:15** | **Poster Session & Lunch** | Sweigart Atrium |
| **1:30-3:00** | **Undergraduate Research Scholar Awards Session** | Sweigart 115 |

# Panel Session

**10:30 AM - 12:00 PM**

## Panel 1: Sustainability & Science

**Location:** Sweigart 117
**Chair:** Dr. Cathy Haught (URSA Committee, Department of Psychology)

**Jessica Canose & Hannah Strong** (Sustainability minor)
*Seed to Satisfy: Rider's Green Acres Organic Garden, A Community Cookbook*
Advisor: Dr. Laura Hyatt

**Adam Natoli** (Psychology)
*The Therapeutic Aspects of Photography*
Advisor: Dr. John Suler

**Tiffany Loren Dill** (Biology)
*Arv1: Linking a Lipid Transporter to Inflammation*
Advisor: Dr. Jonathan Yavelow

**Kate Krsnak** (Geoscience)
*Fossil Turnover between the Maastrichtian and Campanian boundary in the Western U.S.*
Advisor: Dr. Bill Gallagher

## Panel 2: Creative Expression

**Location:** Sweigart 115
**Chair:** Dr. Justin Burton (URSA Committee, Department of Fine Arts)

**Corey O'Neill** (Communication)
*The Steeplechase: Man's Greatest Barrier*
Advisor: Dr. Shawn Kildea

**Louis Esposito** (Art)
*Cubist Influences Today*
Advisor: Dr. Deborah Rosenthal

**Amanda Tufaro** (English)
*Skyhorse Publishing Internship*
Advisor: Dr. Deborah Rosenthal

**Yolanda Leon** (English)
*Through the Eyes of a Broken Child: Poems that Speak to the Soul*
Advisor: Dr. Roberta Clipper

**Tyler Wahl** (English)
*Judgment*
Advisor: Dr. Roberta Clipper

## Panel 3: Law & Power

**Location:** Sweigart 118
**Chair:** Dr. Brooke Hunter (URSA Committee, Department of History)

**Erich M. Huhn** (History)
*Ibn Khaldun's* Prolegomena *as the Course of the American Empire*
Advisor: Dr. Lucien Frary

**Anthony Maddaluno** (Political Science)
*The Imperial Presidency: Unilateral Executive Power in Wartime*
Advisor: Dr. Michael Brogan

**Rebecca Russo** (History)
*"Not Having the Fear of God before Her Eyes": Infanticide in Colonial New Jersey*
Advisor: Dr. Brooke Hunter

**Chris Werner** (History)
*A Christian: The Third Reich*
Advisor: Dr. Lucien Frary

# Poster Session

Sweigart Atrium

1. **Colleen Belmonte** (Dr. Michael Carlin): Differences in Knowledge of Autism, Down Syndrome, and Fragile X Syndrome Across Parents, Teachers, and Students of Education

2. **Jade Bing** (Dr. Danielle Jacobs): Superquat-derived glycolyloxazolidinones and their application toward the asymmetric synthesis of majorenolide and majorynolide

3. **Jade Bing, Martyna Chmielewski, Chris James, Fred Kelly, Lucas Ripley, and Sathis Weerasinghe** (Dr. Bryan Spiegelberg): Effects of Acetylation on the Rate of Transcription of CTGF

4. **James Birkenstamm, Shirley Wen, Tom Weindl** (Dr. Bruce Burnham): Progress on the synthesis of pyrrole $C^5$-nucleosides as potential antiviral agents

5. **James Birkenstamm, Tom Weindl** (Dr. Bryan Spiegelberg): Temperature and pH Conditions Determine the ΔG of GFP Folding

6. **Kaitlin Eckert** (Dr. Cara DiYanni): The Effects of Music on Memory in Preschoolers

7. **Kristin Edwards** (Dr. Maria Villalobos-Buehner): Phonology and its Role in the Classroom to Help ELLs in their Literacy Process: A Case Study

8. **Jason Fortunato, Lynn Kline, Elaine Nieto, Jenny Rich** (Dr. Elaine Scorpio): Relationship between Hemispheric Brain Dominance, Introversion/Extraversion and Reckless Behavior

9. **Wendy Granados** (Dr. Jonathan Karp): Correlates of Stress Response in Female Veterans with and without Posttraumatic Stress Disorder

10. **Aaron Lattin, James Sileo, Natalia Lichon** (Dr. Bryan Spiegelberg): Determination of the ΔG of Folding and the Successful *In Vitro* Refolding of Phycobiliprotein

11. **Kelly Leacock & Shana Gelin** (Dr. Michael Carlin): Attachment and its Effects on Moral Decision-Making

12. **Thaiphi Luu and Jennifer Smolyn (**Dr. Julie Drawbridge): A role for gdnf in pronephric duct cell migration in *Xenopus laevis*

13. **Anthony Maddaluno** (Dr. Thomas Callahan): Veiled Faces: Women and Domestic Life in Modern Egyptian Society

14. **Michael Marafelias (**Dr. Bruce Burnham): Synthesis of Pyrrole $C^5$-nucleosides as Potential Antiviral Agents

15. **Julie McCarthy** (Dr. Paul Jivoff): Factors Influencing Color Perception in Fish

16. **Daniel Pace, Michael Marafelias, Lauren Clabaugh** (Dr. Bryan Spiegelberg): The Effect of Amino Acid Introduction in Solution on Thermodynamic of Phycobiliprotein Folding

17. **Corey Roach** (Dr. Jonathan Karp): Alterations in body weight and learning in C57BL/6 mice following daily maternal separation prior to weaning

18. **Jesse Sheeks** (Dr. James Dickinson): The Demographic and Socio-economic Trend of Trenton, New Jersey

19. **Brittany Sikoryak** (Dr. Chrystina Dolyniuk): Autism Around the Globe

20. **Elizabeth Tkaczynski** (Dr. Julie Drawbridge): Phylogenetic analysis of *Oophila amblystomatis*, an algal symbiont of spotted salamander embryos

21. **Thomas J. Vajtay** (Dr. E. Todd Weber): Is There Strain Specific Variation in the Innervation and Integration of the Optic Nerve in the Suprachiasmatic Nuclei of Mice?

22. **Raju Venkatraman and Kirsten Grover** (Dr. Elaine Scorpio): Comparing leadership preferences with self-perceptions

23. **Jen Whiting** (Rebecca Basham): Ten Minute Play Workshop

24. **Amanda Young** (Dr. Gabriela Smalley): Effects of large dorsal fins on *Betta splenden*s mating selection and their ability to swim against a current

# Undergraduate Research Scholar Awards (URSA) Session

**Sweigart Auditorium (SWE 115)**

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|---|---|
| **1:30** | **Welcome by President Mordechai Rozanski** |
| **1:40-2:45** | **Presentations by 2012-2013 URSA Recipients**<br><br>**Jessica Canose**, Spanish Language & Literature<br>College of Liberal Arts, Education & Sciences<br>Advisor: Dr. Hernán Fontanet, Spanish Language & Literature<br>*Entangled in a Web of Dreams: Unearthing the Subtext of Escapism in Manuel Puig's Kiss of the Spider Woman/Envuelto en una telaraña de sueños: Examinando el subtexto del escapismo en El beso de la mujer araña de Manuel Puig*<br><br>**Allison Ingram**, Environmental Sciences<br>College of Liberal Arts, Education & Sciences<br>Advisor: Dr. Dan Druckenbrod, Environmental Sciences<br>*Factors controlling the distribution and growth of xeric and mesic tree species across George Washington's Mount Vernon plantation*<br><br>**Thomas Vajtay**, Biology<br>College of Liberal Arts, Education & Sciences<br>Advisor: Dr. E. Todd Weber, Biology<br>*Is There Strain Specific Variation in the Innervation and Integration of the Optic Nerve in the Suprachiasmatic Nuclei of Mice?*<br><br>**Naomi Vernon**, Musical Theatre and Arts Administration minor<br>Westminster College of the Arts<br>Advisor: Dr. Todd Dellinger, Fine Arts<br>*Czech Musical Theatre*<br><br>**Michael P. Zubert**, Music Education<br>Westminster College of the Arts<br>Advisor: Dr. Janet Cape, Music Education<br>*Using Digital Audio Workstations to Enhance Learning in High School Music Education Classrooms* |

| | |
|---|---|
| **2:45-3:00** | **Announcement of 2013-2014 URSA Recipients**<br><br>**Amanda Bertram**, Psychology<br>College of Continuing Studies<br>Advisor: Dr. Gary M. Brosvic, Psychology<br>*Factor Analysis of Expectations and Agreement with Steps 1-3 of a Twelve-Step Recovery Program*<br><br>**Oleksandra Dorosheva**, Biochemistry<br>College of Liberal Arts, Education & Sciences<br>Advisor: Dr. Bryan Spiegelberg, Chemistry, Biochemistry and Physics<br>*Determination of a Role for Gβγ in the Cell Cycle Progression in Human Cells*<br><br>**Louis A. Esposito**, Fine Arts/Art Concentration<br>Westminster College of the Arts<br>Advisor: Dr. Deborah Rosenthal, Fine Arts<br>*Body of Work: Work on the Body*<br><br>**Sara Hartigan**, Psychology and Law & Justice minor<br>College of Liberal Arts, Education & Sciences<br>Advisor: Dr. Wendy P. Heath, Psychology<br>*Sentiment in the Courtroom: Effects of Attorney Emotion during Closing Arguments on Juror Decision-Making*<br><br>**Farzana Razack**, Business Economics and Health Administration minor<br>College of Business Administration<br>Advisor: Dr. William Amadio, Information Systems & Supply Chain Management<br>*The Geographic Distribution of Physicians in the United States* |

# PROJECT ABSTRACTS

PSTR= Poster Session
PNL= Panel Session
URSA=URSA Session

## Colleen Belmonte

**Advisor**: Dr. Michael Carlin
**Title**: Differences in Knowledge of Autism, Down Syndrome, and Fragile X Syndrome Across Parents, Teachers, and Students of Education
**Abstract**: Past studies of disability knowledge in professionals (e.g., Strike et al., 2004) have shown that people have some familiarity with disabilities, particularly autism and Down syndrome, but the depth of their knowledge often is lacking. Our project focuses on relationships between exposure to people with disabilities, professionally or personally, amount of disability education (e.g., special education classes), and knowledge of people with autism, Down syndrome, and Fragile X. We wanted to determine whether professionals in direct contact with those disabilities had more, and accurate, knowledge, to inform their practice. We also wanted to determine whether students of education and special education were gaining specific knowledge about disabilities while undergraduates. **PSTR**

## Amanda Bertram

**Advisor**: Dr. Gary M. Brosvic
**Title**: Factor Analysis of Expectations and Agreement with Steps 1-3 of a Twelve-Step Recovery Program
**Abstract**: This research project will assess how expectations effect participation in and personal conceptualizations of steps one through three of a Twelve Steps Recovery Program. Data will be collected from at least 200 active participants in Alcoholics Anonymous and Narcotics Anonymous using two primary survey instruments. Psychometric properties of both instruments and their convergent and discriminant validities will be determined through factor analyses and principal component analyses. Emphasis shall be placed on measuring participants' agreement with the first three Steps and then on examining relationships between expectations, abstinence, and program participation. **URSA**

## Jade Bing

**Advisor**: Dr. Danielle Jacobs
**Title**: Superquat-derived glycolyloxazolidinones and their application toward the asymmetric synthesis of majorenolide and majorynolide
**Abstract**: Asymmetric glycolate alkylations have been traditionally limited to primary, sterically-unencumbered electrophiles; our laboratory accordingly seeks to increase the scope of compatible electrophilic partners, potentially reinvigorating the utility of this valuable alkylation in organic synthesis. Primary investigations into the asymmetric alkylation of (S)-p-methoxybenzylglycolyl-i-propyl-2-oxazolidinone, with both *t*-Bu and *i*-butyl-2-(methyliodo)acrylates, provided products in good yields yet poor diastereoselective ratios. Ethyl acrylates provided multiple products, likely a result of competitive alkylation at the

alkene terminus and ester carbonyl. These initial results prompted us to employ less common Superquat chiral auxiliaries to induce higher diastereo- and regioselectivity via enhanced rigidity of the enolate transition state. Our current progress and results are reported toward this end. Upon optimization, this methodology should enable the synthetic preparation of unique γ-lactone natural products bearing exo-methylene functionality at the γ position, as showcased in our laboratory's progress toward the first total synthesis of the cytotoxic natural products majorynolide and majorenolide. **PSTR**

## Jade Bing, Martyna Chmielewski, Chris James, Fred Kelly, Lucas Ripley, and Sathis Weerasinghe

**Advisor**: Dr. Bryan Spiegelberg
**Title**: Effects of Acetylation on the Rate of Transcription of CTGF
**Abstract**: The process of gene regulation and expression is essential for the survival, growth, and adaptation of all organisms as it allows for the regulation of protein production. Histones are one of the tools cells use to control transcription, in part through acetylation and deacetylation of lysine residues. Trichostatin A (TSA) is an organic compound that inhibits the deacetylation of these lysine residues. Without the ability to conduct this deacetylation, the cell loses some control over the transcription of DNA. In this experiment it is shown that TSA is able to increase the rate of transcription of specific genes in HEK293 cells. The gene that was studied was connective tissue growth factor (CTGF). It is important to study transcriptional control of CTGF, because unregulated CTGF transcription can cause rheumatoid arthritis and cancer. This process was studied through the utilization of RT-PCR and agarose gel electrophoresis. These techniques demonstrated that TSA increases the rate of transcription of CTGF. This increased rate of transcription suggests that inhibition of deacetylation either directly or indirectly lowers transcriptional control of the CTGF gene. **PSTR**

## James Birkenstamm, Shirley Wen, Tom Weindl

**Advisor**: Dr. Bruce Burnham
**Title**: Progress on the synthesis of pyrrole $C^5$-nucleosides as potential antiviral agents
**Abstract**: Nucleoside analogs have a long history of use as anticancer or antiviral drugs. Since there is only one drug featuring a 5-membered nitrogen heterocyclic nucleoside currently in use, ribavirin, and none from the pyrrole class, then these nucleoside derivatives represent new and challenging targets for synthesis. The goal is to develop synthetic methods to prepare such pyrrole nucleosides with a ribose group at the *C*-5 position. The synthesis of such a series of derivatives will provide the basis for a study of the relationship between structure and activity for IMPDH inhibition. The pyrrole ring is constructed from a three-carbon synthon (e.g., a chloroenal or iminium salt) and an amino ketone under neutral conditions. A new synthesis has shown to increase the yield of the pyrrole ring formation by using a microwave. Reaction was heated to 170℃, 60 W, for 30 minutes and showed a yield of 53-80% higher than the initial 14%. The pyrrole $C^5$-nulceoside is then prepared by treating the pyrrole with a Lewis acid (TiCl4) followed by the addition of a protected ribose 1-acetate. Deprotection by sodium methoxide affords the pyrrole-$C^5$-ribonucleoside product. **PSTR**

## James Birkenstamm, Tom Weindl

**Advisor**: Dr. Bryan Spiegelberg
**Title**: Temperature and pH Conditions Determine the ΔG of GFP Folding
**Abstract**: Green fluorescent proteins (GFPs) are useful tools in many areas of biology. GFP's exhibit a typical $\lambda_{em.}$ max in the green range of the visual light. GFP holds a beta barrel structure, protecting the inner chromophore, four amino acids directly producing the protein's fluorescent effect. A spectrometer was used to measure the folding of a GFP analogue, phycobiliprotein, at varying pH levels to determine the role of histidine on the proteins ability to fold; after an optimal pH was found, folding was tested at varying temperatures at the optimal pH. Naturally GFP folds when expressed at or below room temperature, but its folding efficiency was shown to decline steeply at higher temperatures and non-neutral pH levels, likely because the jellyfish from which GFP was derived would have never experienced stressing thermodynamic conditions. **PSTR**

## Jessica Canose

**Advisor**: Dr. Hernán Fontanet
**Title**: Entangled in a Web of Dreams: Unearthing the Subtext of Escapism in Manuel Puig's Kiss of the Spider Woman / Envuelto en una telaraña de sueños: Examinando el subtexto del escapismo en El beso de la mujer araña de Manuel Puig
**Abstract**: Completing a project that began nearly a year ago, this Spanish Senior Thesis focused on Manuel Puig's 'Kiss of the Spiderwoman' in its purity, extensively analyzing the original text, English translation and movie—and consequently the differences in translation and interpretation. Forming a comparative analysis, I contrasted the evolution of homosexual prisoner Luis Molina with political rebel Valentín Arregui, exploring how storytelling functions in their personal evolutions. Movies are found to be more than mere entertainment, as they become a method of communication and manner in which the cellmates are able to explore the taboo concepts of homosexuality, reality and fantasy. Ironically only in the freedom afforded to them by a jail cell are they able to change, each subtly becoming more like the other. Balances are toyed with as Molina embraces his ultimate fate and fellow prisoner Valentín begins to indulge in life's luxuries—all prompted by the creation and retelling of Hollywood films. This particular escapist method functions as a both a 'poison' and 'antidote' to the repressive society in which Molina and Valentín (representing rejected societal archetypes) are forced to live. With this conclusion, Manuel Puig's iconic influence achieves an even higher level of universality. **URSA**

## Jessica Canose & Hannah Strong

**Advisor**: Dr. Laura Hyatt
**Title**: Seed to Satisfy: Rider's Green Acres Organic Garden, A Community Cookbook
**Abstract**: Rider's Green Acres, our University's organic garden, first broke ground on the Lawrenceville campus in the summer of 2011 and the Westminster campus in the spring of 2012. We began with the mission to provide local sustainable food for our University community, educating them about the growing process while helping them find beauty in—and

respect for—all life. For two years now, we have been remarkably busy, harvesting three seasons a year and distributing produce weekly, in exchange for volunteer work.

The concept of the garden began in the classroom, where it became clear that not all students knew where their food came from or how to cook it. This project is an extension of what started around the giveaway table, where a recipe-exchange naturally began. Presented in a narrative style, our cookbook houses a collection of recipes featuring past produce and articles explaining our gardening methods. Select recipes are multilingual, indicating how food and culture are inextricably interwoven and a vital part of our personal journeys. Imparting the ease and gratification derived from cultivating one's own food, our cookbook encourages readers to join our community and understand what it means to grow sustainably, from seed to table. **PNL**

## Tiffany Loren Dill

**Advisor**: Dr. Jonathan Yavelow
**Title**: Arv1: Linking a Lipid Transporter to Inflammation
**Abstract**: Arv1 is a transmembrane protein located in the endoplasmic reticulum, and is required for sterol and lipid homeostasis in both yeast and humans. A 94-amino acid segment of Arv1, called the AHD (Arv1 Homology Domain), is associated with the majority of known Arv1 activity. Unfolded Protein Response Elements (UPREs) are sites on specific, often proinflammatory genes that are upregulated during the Unfolded Protein Response. In yeast, Arv1 knockouts show constitutive expression of UPREs; likewise, knockdown of Arv1 in human cells activates genes involved with tubular inflammation. For this reason, we think mutations in the UPRE-regulating portion of Arv1 could be involved with the formation of atherosclerotic plaques. Using LacZ as a reporter for IRE-1 expression, I have conducted β-galactosidase reporter assays on various Arv1 mutants in yeast to localize the segment(s) of Arv1 responsible for suppressing UPRE expression. Initially, it was expected that regulation of UPREs would be traced back to the AHD. Surprisingly, data suggests that both full length Arv1 and AHD-knockout yeast are similar in low UPRE expression, whereas expression of AHD alone yields constitutive UPRE expression. These findings suggest that there is a portion of Arv1 beyond the AHD that is responsible for suppression of UPREs. **PNL**

## Oleksandra Dorosheva

**Advisor**: Dr. Bryan Spiegelberg
**Title**: Determination of a Role for Gβγ in the Cell Cycle Progression in Human Cells
**Abstract**: Control of the cell cycle by regulatory proteins is critical for organism' development and survival. Recent studies have shown that the signaling protein Gβγ is involved in the regulation of the mitotic spindle during mitosis in lower organism such as roundworm Caenorhabditis elegans. In the following project, cellular localization of Gβγ and physical association with the mitotic spindle as human cells undergo mitosis will be studied to investigate a role for Gβγ in the mammalian cell cycle. The resulting insight into the cell cycle may facilitate the understanding of the cell cycle dependent diseases such as cancer. **PNL**

## Kaitlin Eckert

**Advisor**: Dr. Cara DiYanni
**Title**: The Effects of Music on Memory in Preschoolers
**Abstract**: Previous research has shown that preschoolers have good recognition memory (Brown & Scott, 1971), as well as good metamemory, which is the ability to understand one's own memory processes (Wellman, 1977). Additionally, music has an effect on memory (Gingold & Abravanel, 1987; Ivanov & Geake, 2003). In particular, researchers have studied the "Mozart effect," or the idea that classical music affects memory (e.g. Jones, West, & Estell, 2006), but have been inconclusive about whether or not the effect really exists (Pietschnig, Voracek, & Formann, 2010). My study explored whether or not the Mozart effect has an impact on children's memory. To do this, I divided 54 children into three groups, and presented each group with a recognition memory task. The first group had no music during the study period, the second group heard an instrumental version of a pop song, and the third group heard a selection from Mozart. Preliminary results suggest that there is no difference between conditions. That is, music (classical or popular) does not have either a negative or a positive impact on memory in preschoolers. **PSTR**

## Kristin Edwards

**Advisor**: Dr. Maria Villalobos-Buehner
**Title**: Phonology and its Role in the Classroom to Help ELLs in their Literacy Process: A Case Study
**Abstract**: Through my linguistics course I learned about Phonology, which is the study of how speech sounds form patterns. After learning about Phonology, I conducted a case study on an English Language Learner that was in my cooperating classroom. I started by collecting data in order to determine his areas of need. I analyzed his writing in order to see what sounds he had difficulty sounding out. I determined that he had difficulty with both the short and long, "e" sound. I researched best practice in teaching phonological skills, and found that it is best taught in context. After researching and analyzing, I planned and implemented a lesson in order to address this area of need. The lesson started with a warm-up activity with minimal pairs. The student had to identify the short and long vowel sounds in different words. The student then read a leveled text entitled *The Gray Wolf*, and we discussed the short and long vowel sounds that the student noticed. The student then answered comprehension questions and wrote dictation sentences. This lesson was very successful and the student retained the skill. I utilized two additional pieces of writing that he did after the lesson as a post-assessment. **PSTR**

## Louis A. Esposito

**Advisor**: Dr. Deborah Rosenthal
**Title**: Body of Work: Work on the Body
**Abstract**: Controversial, perhaps provocative, but equally esteemed for their craft, the enigmatic paintings of the twentieth-century artist Balthus are the subject of this study. As a figure painter studying a master of the figure, I will try to understand the significance of Balthus' narratives incorporating young female models. I will analyze his work through figure drawings and paintings of my own; I will also study artists who influenced him, and read some

of the key texts about figure painting. I propose to create a group of figure drawings and paintings that result directly from my investigation of Balthus' themes and process. **URSA**

## Louis Esposito

**Advisor**: Dr. Deborah Rosenthal
**Title**: Cubist Influences Today
**Abstract**: This year in my studio-art courses in painting, printmaking and design, I have begun to reach deep into my own sources of inspiration as an artist. I have developed a particularly crucial idea within my paintings--an idea that stems from Cubism and the artists associated with it--particularly Pablo Picasso and Georges Braque. Painting and drawing from the live model, from still life, and from such odd sources as mathematical models of a Möbius strip (a one-sided plane)--I have built compositions with particular emphasis on the geometry of space. Reducing, stylizing, and re-shaping the forms I observe in front of me, I have constructed pictures where the volumes are broken, space is a dynamic factor, and angles and heightened color translate visible reality into a world of forces rather than mere things. My PowerPoint presentation is a discussion of the structural basis of these compositions of mine. **PNL**

## Jason Fortunato, Lynn Kline, Elaine Nieto, Jenny Rich

**Advisor**: Dr. Elaine Scorpio
**Title**: Relationship between Hemispheric Brain Dominance, Introversion/Extraversion and Reckless Behavior
**Abstract**: A study was conducted to ascertain if a relationship exists between the amount of reckless behavior a person engages in and their hemispheric brain dominance (Favoring a left or right-brain preference), as well the personality trait of introversion/extraversion. Three established scales were used to measure hemisphericity (Human Information Processing Survey), Introversion/extraversion (Myers-Briggs Type Indicator) and reckless behavior (Reckless Behavior Questionnaire). As predicted, a significant positive correlation was found between the amount reckless behavior committed and being more right-brain dominant. A significant positive correlation was also found between extraversion and reckless behavior.
**PSTR**

## Wendy Granados

**Advisor**: Dr. Jonathan Karp
**Title**: Correlates of Stress Response in Female Veterans with and without Posttraumatic Stress Disorder
**Abstract**: Previous research on PTSD has focused almost exclusively on males. This study is examining stress response in female veterans versus non veterans in relation to responses on the Post-traumatic Stress Diagnostic Scale (PDS), and Beck Depression Inventory II (BDI-II). Stress response will be assessed through the collection of salivary cortisol. Participants will provide diurnal samples as well as samples in response to the Trier Social Stress Test (TSST). It is expected that female veterans with PTSD will have blunted baseline cortisol levels compared to controls. The PTSD positive veterans will also show a higher salivary cortisol response to the TSST than non PTSD participants. The expected outcome of this study is a refinement of current

knowledge regarding the impact of PTSD on the biological mechanisms of stress. Results may also contribute to the understanding of sex differences in stress related disorders. **PSTR**

## Sara Hartigan

**Advisor**: Dr. Wendy P. Heath

**Title**: Sentiment in the Courtroom: Effects of Attorney Emotion during Closing Arguments on Juror Decision-Making

**Abstract**: Jury decisions are the cornerstone of the justice system. Any biasing factor that can potentially impact a juror needs to be examined. The proposed study seeks to investigate the effects of attorney emotion during closing arguments on juror decision-making. Participants will view closing arguments from a prosecutor and a defense attorney (both portrayed by actors) during a rape and robbery trial. Each attorney will either display a sad, angry, or unemotional demeanor. After viewing this video, participants will answer a questionnaire regarding defendant guilt and attorney credibility. **URSA**

## Erich M. Huhn

**Advisor**: Dr. Lucien Frary

**Title**: Ibn Khaldun's *Prolegomena* as the Course of the American Empire

**Abstract**: Many American textbooks begin the American Empire with the Hawaiian Annexation and Spanish American War. These two events, the textbooks claim, allowed American growth internationally into the Pacific and the Caribbean. The American Empire however has grown and expanded its influence throughout the world between its conception and today, yet by looking at the course of the Empire through the writings of Ibn Khaldun, the influential Arab philosopher, it can be argued that the Empire is on a decline. With events such as the Vietnam War, the youth movement of the 60s, and the continuing conflicts in the Middle East the American Empire is arguably losing its influential position. Ibn Khaldun poses his theories on the course of empire in his Prolegomena claiming that empires only last three generations, placing us at the tail end of the only real empire we know. By looking at Ibn Khaldun's writings on society and the course of empire it is obvious that there has been a decline in the strength of American might abroad and clear similarities can be found between the rise and fall that Ibn Khaldun writes about and the history of America in the last 125 years. **PNL**

## Allison Ingram

**Advisor**: Dr. Dan Druckenbrod

**Title**: Factors controlling the distribution and growth of xeric and mesic tree species across George Washington's Mount Vernon plantation

**Abstract**: This study used tree-ring measurements, forest plots, and GIS maps to examine the effects of topography and soil moisture on growth rates and basal areas for xeric tree species, chestnut and white oak, and mesic tree species, including poplar, beech, northern red oak and maple, across George Washington's Mount Vernon plantation. The objectives were to determine whether growth rates and basal areas across the site are influenced by these factors and to determine what explains the distribution of different tree species across the property. Across Mount Vernon, it appears that oaks are observed on the drier plateau while

mesic species are typical within the riparian zone. This study tests whether these factors could account for their variation across the plantation. Chestnut oaks, white oaks and mesic species were compared as three separate groups. For mesic species, basal areas increased with increasing AWS (available water supply) and decreased with increasing elevation and slope. For white oaks, basal areas and growth rates decreased with increasing slope and increased with increasing elevation. Growth rates increased with increasing TWI (topographic wetness index). For chestnut oaks, basal areas increased with increasing slope and growth rates decreased with increasing TWI. Mesic species prefer lower areas with more available water, white oaks prefer higher elevations with higher amounts of soil moisture and chestnut oaks prefer areas with lower amounts of soil moisture. **URSA**

## Kate Krsnak

**Advisor**: Dr. Bill Gallagher

**Title**: Indicated Fossil Turnover between the Maastrichtian and Campanian boundary in the Western United States

**Abstract**: The Campanian stage occurred between 83.5-70.6 million years ago (Ma) and was directly followed by the Maastrichtian stage, lasting from 70.6-66.0 Ma. In the Western United States the Campanian stage is best represented by the Lance and Hell Creek formations; deposited mainly by freshwater streams on what is believed to have been a coastal plain from the Western Interior Seaway (WIS). The Maastrichtian stage is best represented in the Western U.S. by the Meeteetse, Mesaverde, Judith River, and Lewis Shale formations; representing more of a marine environment, composed mostly of shale and mudstones and representing the last phase of the WIS before it disappeared at the end of the Cretaceous period.

Since 2001, the New Jersey State Museum has been collecting fossil specimens straddling the Campanian/Maastrichtian boundary out in the Western U.S., specifically, Montana and Wyoming. This research project looked intensely at the NJSM fossil collections from these paleontological digs, cataloging and analyzing the specimens. Using the data analysis from the NJSM collections, as well as supplemental literary sources discussing the fossil fauna of the Western United States straddling the Campanian/Maastrichtian boundary, evidence was compiled of a noticeable change in the fossil record, indicative of a small-scale extinction event.
**PNL**

## Aaron Lattin, James Sileo, Natalia Lichon

**Advisor**: Dr. Bryan Spiegelberg

**Title**: Determination of the ΔG of Folding and the Successful *In Vitro* Refolding of Phycobiliprotein

**Abstract**: The three dimensional structure of a protein is responsible for its activity. Proteins such as green fluorescent protein and phycobiliprotein expresses fluorescence when in their natural state, but when they become denatured, no fluorescence is observed. To determine the stability of the folded state, one can measure the ΔG using the fluorescence. A negative ΔG represents the favorability of the folded state. Additionally, an attempt was made to refold the protein after being denatured by various urea concentrations. The experiment determined that the folding of these proteins were favorable therefore one would expect that the protein,

under denaturing conditions, would refold completely. However there was only slight refolding after it was denatured. **PSTR**

## Kelly Leacock & Shana Gelin

**Advisor**: Dr. Michael Carlin
**Title**: Attachment and its Effects on Moral Decision-Making
**Abstract**: Beginning with Bowlby, attachment has been studied with a focus on its effects on a child's long-term development. The current study explored the relationship between an individual's early attachment to their family and moral decision-making. Six moral dilemmas varying in character relationship (e.g., family member or not) and number of people (i.e., save 1 or 3) were presented. Decisions made on moral dilemmas were correlated with self-reported levels of attachment to family members. **PSTR**

## Yolanda Leon

**Advisor:** Dr. Roberta Clipper
**Title:** Through the Eyes of a Broken Child: Poems that Speak to the Soul
**Abstract:** The book of poems contains various pieces of poetry that tell a story of growth, pain, and hardship through the eyes of a woman who was broken as a child.

As a child, the woman was verbally abused by her mother; she was told every day that she would never amount to anything, she should have been aborted, and that she should disappear off the face of the earth. All of these traumatizing events caused the little girl to grow up with a skewed and damaged perspective/vision of the world, a world she would and does later on discuss through her writing. When she turned 18, the woman sought help from a therapist to try to unlearn as an adult all the unhealthy behaviors and ideas she had come to know as a child.

The poems give insight into the woman's life growing up, show the audience some perspectives the woman had as a child and develops later on as an adult, and will teach the audience lessons from the woman's point-of-view. Some poems are written in first-person, others in third, and others as strictly stories being told. **PNL**

## Thaiphi Luu and Jennifer Smolyn

**Advisor:** Dr. Julie Drawbridge
**Title:** A role for gdnf in pronephric duct cell migration in *Xenopus laevis*
**Abstract:** Anterior to posterior extension of the Xenopus pronephric duct (PD) is complex, consisting of three distinct temporal phases: During the first phase, pronephric and PD tissue segregates from flank mesoderm directly ventral to somites IVVIII; during the second phase, cells migrate throughout the duct extending it to the axial level of somite XIV; finally, anterior extension of rectal diverticulae (RD) from the cloaca to the posterior tip of the PD is required to complete morphogenesis of a functional conduit for excretory waste. Our studies of axolotl embryos showed that GDNF signaling through the Ret/GFRalpha-1 receptor plays a role in posterior PD extension; we are extending our studies to investigate whether GDNF plays a similar role in Xenopus. Here, we show that Xenopus laevis expresses two GDNF paralogs

similar to the long form of mammalian GDNF, and one alternatively-spliced form. We also show that GFRalpha-1 is necessary for the second phase of PD elongation. In addition, the expression patterns of Xenopus gdnf, gfra1 and ret indicate that this signaling system could play a role in both PD and RD morphogenesis. Our recent findings suggest GDNF does not have an effect on the RD but has a permissive role in PD migration. **PSTR**

## Anthony Maddaluno

**Advisor**: Dr. Thomas Callahan
**Title**: Veiled Faces: Women and Domestic Life in Modern Egyptian Society
**Abstract**: This research paper studies the position of women in Egyptian society from a sociological and historical perspective. The impact of different historical forces such as colonialism, modernization, indigenous secular nationalism and Islamist Fundamentalism and how the interplay of these powerful social forces has formed different sociological narratives of women's expected role in Egyptian society particularly in the form of female veiling. The degree and variation of female veiling in contemporary Egypt are compared and dissected in order to reveal the conflicting sociological assumptions that current gender norms in Egypt are based on. The impact of race, class on gender status is evaluated with comparative case studies of Egyptian women across different socioeconomic and racial lines. Comparative studies of Egyptian women with different education backgrounds are also incorporated into the study to weigh the impact of education on female self-imaging and veiling practices. **PSTR**

## Anthony Maddaluno

**Advisor**: Dr. Michael Brogan
**Title**: The Imperial Presidency: Unilateral Executive Power in Wartime
**Abstract**: In the wake of 9/11 our society has witnessed an extraordinary expansion of Presidential power that has challenged many of the bedrock principles of our republic. Presidential polices such as the indefinite detention, enhanced interrogation and the suspension of due process for suspected terrorist suspects, as well as predator drone strikes on U.S. civilians and the growing frequency of Presidential wars sanctioned by a lax and often silent Congress, raises the specter of a new Imperial Presidency that poses a new danger to the future of our American Republic.

This senior thesis evaluates each of the aforesaid mentioned post 9/11 Presidential Policies from both a legal and historical perspective. Supreme Court Cases, Congressional Legislation, Military law codes and International Laws are some of the primary research sources used in this analysis. Through a comparative analysis of Presidential power from World War Two to the War on Terror a clearer understanding of the nature of executive power during wartime and the shared relationship between Congress and the President to uphold our nation's security. **PNL**

## Michael Marafelias

**Advisor**: Dr. Bruce Burnham
**Title**: Synthesis of Pyrrole $C^5$-nucleosides as Potential Antiviral Agents

**Abstract**: Currently, there is only one drug available containing a 5-membered nitrogen heterocyclic nucleoside (ribavirin), although none from the pyrrole class. Since nucleoside analogs have proven to have uses in antiviral and anticancer drugs, possible nucleoside derivatives pose new targets for synthesis. The development of methods of synthesis to prepare these pyrrole nucleosides along with a ribose group at the C-5 position is the overall objective. This can be accomplished by conducting a series of syntheses producing derivatives which then can exhibit the relationship between activity and structure for inosine monophosphate dehydrogenase (IMPDH) inhibition. The construction of the pyrrole ring derives from a 3-carbon synthon (iminium salt, chloroenal, etc.) along with an amino ketone kept under neutral conditions. The preparation of the $C^5$-nucleoside of the pyrrole ring is accomplished via the pyrrole undergoing the treatment of a Lewis acid ($TiCl_4$), then a protected ribose 1-acetate is added. The pyrrole-$C^5$-ribonucleoside product is yielded after sodium methoxide is added and deprotection occurs. Since there are presently no literature sources on pryrrole nucleoside which inhibit IMPDH, it has given motivation to develop these methods to synthesize these compounds in hopes of developing a class of new drugs. **PSTR**

## Julie McCarthy

**Advisor**: Dr. Paul Jivoff
**Title**: Factors Influencing Color Perception in Fish
**Abstract**: Fish use color vision in a variety of ways. Color vision is very important in the search for food. *Amphiprion ocellaris* are known to live in a colorful environment, such as a coral reef. This suggests that color vision may be important for this species perceive color. Albinos experience optical abnormalities. Color preference is interesting because the recognition of food items is based on vision. The ability to see colors may not only be based on the rods and cones in the eye, but it could also be visibility. Fish that are not exposed to a wide spectrum of colors, such as the *Fundulus heteroclitus*, may not be able to perceive color as *Amphiprion ocellaris* do. They may not have developed the ability to decipher colors in their habitat. Eleven Fundulus heteroclitus, thirteen *Amphiprion ocellaris* and twelve albino *Amphiprion ocellaris* will be used in this study. The fish are trained to "tap" a certain color (red, blue or yellow) to receive a food reward. The colors they are trained on will be tested against colors the other fish are tested on as well as a color that no fish are trained on (green). **PSTR**

## Adam Natoli

**Advisor**: Dr. John Suler
**Title**: The Therapeutic Aspects of Photography
**Abstract**: The purpose of my study was to investigate the potentially beneficial aspects of people taking photographs, and then articulating their thoughts and feelings about those photos. The study's focus was on the possible differences between photographs people remembered taking and photographs they didn't remember taking or repressed. The results of this study may be used to contribute to the current knowledge about phototherapy techniques and how the use of photos in psychotherapy stimulates personal insight.
I discovered four patterns in my data, which was collected from eight participants. The first was that forgotten photographs typically related to the negative areas of a person's life while the

remembered photographs typically related to the positive areas of a person's life or desires for relaxation and calmness. The next pattern was that positive areas of life portrayed in remembered photographs might represent the way or ways in which the individual copes with a negative area of life portrayed in the forgotten photographs. The third finding was that remembered photographs might also reflect negative areas of life that were recently improved or addressed. The final pattern helped with the understanding between forgotten photographs and non-remembered photographs. **PNL**

## Corey O'Neill

**Advisor**: Dr. Shawn Kildea
**Title**: The Steeplechase: Man's Greatest Barrier
**Abstract**: This documentary explores a Track & Field event known as the steeplechase. It is a 3,000 meter-long running event that includes hurdling over barriers, some of which are over a water pit. To gain some insight and personal accounts on this difficult event, I conducted interviews with Rider Track & Field Alumnus Mike Soroko, Rider Track & Field Head Coach Bob Hamer, Temple Track & Field Alumnus Travis Mahoney, and 1952 Olympic Steeplechase gold medalist Horace Ashenfelter. **PNL**

## Daniel Pace, Michael Marafelias, Lauren Clabaugh

**Advisor**: Dr. Bryan Spiegelberg
**Title**: The Effect of Amino Acid Introduction in Solution on Thermodynamic of Phycobiliprotein Folding
**Abstract**: Phycobiliproteins share many structural similarities to that of the thoroughly researched Green Fluorescent Protein (GFP) being that they both contain a chromophore encaged within a protein that is capable of fluorescence when exposed to UV light. If the protein is denatured, the resulting exposure of the chromophore to the environment will surrender its fluorescent properties. By analyzing spectrophotometric properties as a function of denaturant, ΔG of the protein itself was found. In this experiment we analyzed the effects on ΔG of phycobiliproteins upon the addition of the amino acids alanine, aspartic acid, glycine, and glutamine. What should be done next is to determine more specifically which amino acids and which regions of the phycobiliprotein the introduced amino acids interact with in solution to produce a more stable protein. However this will require more research on the complete structure of phycobiliproteins. **PSTR**

## Farzana Razack

**Advisor**: Dr. William Amadio
**Title**: The Geographic Distribution of Physicians in the United States
**Abstract**: The purpose of my research is to investigate the geographic distribution of physicians across the United States. Specifically, my research will focus on the distribution of physicians in rural areas because they tend to be under-served. The number of designated Health Professional Shortages Areas (HPSAs) or Medically Underserved Populations/Areas (MUA/Ps) per state will be considered when suggesting policies that will aim to evenly distribute primary care and specialty physicians. In addition, the current provisions of the Affordable Care Act

(ACA) that seek to influence physician distribution will also be studied. Throughout the research, data from the United States Census Bureau and the National Plan and Provider Enumeration System (NPPES) will be used. Multiple regression models will examine how variables such as income, poverty, urbanicity, minority groups in the area, climate, and physician characteristics such as gender, training, and preferred lifestyle factors influence the physician per capita ratio. **URSA**

## Corey Roach

**Advisor**: Dr. Jonathan Karp
**Title**: Alterations in body weight and learning in C57BL/6 mice following daily maternal separation prior to weaning
**Abstract**: This study examined the consequences of manipulating the pre-weaning environment on the growth and learning of C57BL/6 adult mice. Pups were separated from their mothers daily during the light portion of the light-dark cycle for 3 hours from postnatal day 1 through either postnatal day 10 or 20. Control litters were deprived of *ad libitum* food and water during the separation procedures. Daily body weight measurements revealed two consequences of mother-pup separation. First, mice separated daily for 10 days showed a compensatory transitory increase in body weight after the separation procedures ceased. Second, mice separated from their mothers daily for 20 days weighed less at the end of the separation procedures than non-separated controls. Evaluation of the behavioral performance of the separated and non-separated mice on a step-down learning task after weaning revealed maternally separated mice exhibited a greater step-down latency than controls. This effect on learning a stress-associated task was not influenced by exposure of the mice to restraint stress 3, 24, or 72 hours prior to behavioral testing. These results reveal that both male and female mice deprived of normal mother-pup interactions prior to weaning show alterations in body weight gain and increased sensitivity to a fearful task. **PSTR**

## Rebecca Russo

**Advisor**: Dr. Brooke Hunter
**Title**: "Not Having the Fear of God before Her Eyes": Infanticide in Colonial New Jersey
**Abstract**: Historians have studied infanticide in parts of colonial America but not New Jersey. Records of eleven Supreme Court indictments for infanticide in Colonial New Jersey form the basis of this project. Three specific patterns can be determined from these cases. The first is chronological; most occurred in a concentrated period of time. The second pattern relates to gender as the majority of individuals prosecuted were women. The final pattern is the frequency of not guilty verdicts. New Jersey's law targeted unmarried poor women but these same qualities promoted sympathy from jurors. Adoption of the infanticide law responded to a need for stability but the interpretation of the law reflected new cultural attitudes. **PNL**

## Jesse Sheeks

**Advisor**: Dr. James Dickinson
**Title**: The Demographic and Socio-economic Trend of Trenton, New Jersey

**Abstract**: After the de-industrialization of Trenton New Jersey in the early and mid 1900's, the city became a symbol of urban decay where poverty thrives. The racial identity of the population that inhabits the area has also changed since the downfall of industry within the once prosperous city. Focusing on the change of the city's racial demographics, household income levels, poverty, welfare, employment, and educational attainment rates, an analysis of the last decade will show specifically how Trenton has changed in recent years. Organizing United States census data of Trenton and other New Jersey cities in a particular fashion will afford an explicit and accurate perception of Trenton's demographic change, and current socio-economic conditions. **PSTR**

## Brittany Sikoryak

**Advisor**: Dr. Chrystina Dolyniuk
**Title**: Autism Around the Globe
**Abstract**: Autism spectrum disorders affect approximately 67 million people around the globe. In the United States, the Center for Disease Control has identified that 1 in 88 American children are on the Autism Spectrum. Prevalence rates in other countries are unclear or nonexistent. The purpose of this study was to examine the prevalence and/or awareness of autism around the globe. A review of the literature demonstrated some common themes: lack of knowledge on autism in many countries, lack of resources, and an absence of screening and diagnostic measures. The poster identifies areas of need and highlights the need for more global resources to help children oversees receive the interventions they need. **PSTR**

## Elizabeth Tkaczynski

**Advisor**: Dr. Julie Drawbridge
**Title**: Phylogenetic analysis of *Oophila amblystomatis*, an algal symbiont of spotted salamander embryos
**Abstract**: The single celled alga*, Oophila ambystomatis*, lives inside the egg capsule of spotted salamander embryos, *Ambystoma maculatum*. Studies suggest that the relationship between the two organisms is symbiotic; the alga provides developing embryos with oxygen and the embryos may provide a source of nitrogen for the alga. Since Oophila generate oxygen via photosynthesis, the embryos are exposed to hyperoxic conditions during the day when photosynthesis is occurring and hypoxic to anoxic conditions at night when both embryos and algae are respiring. The pathway for handling changes in oxygen levels has only been studied in embryos which normally experience very small changes in oxygen levels during development. Therefore, studying the development of *Ambystoma maculatum* may provide us with a natural system in which to investigate how normal vertebrate development can occur in an environment of widely fluctuating oxygen concentration. Here I present my strategy for investigating the identities of the species of alga within the egg capsule as well as how the species compare over a geographical range. **PSTR**

## Amanda Tufaro

**Advisor**:
**Title**: Skyhorse Publishing Internship

**Abstract**: For my spring 2013 internship I am working at Skyhorse Publishing, an independent publishing company in New York, founded in 2006. They publish titles in various genres, including a book series by my internship advisor, Prof. Deborah Rosenthal, called Artists and Art. At Skyhorse my duties include reviewing submissions on various subjects, among them history, athletics, and nonfiction. I also provide written analysis of book content and perform research on an assortment of topics. This research pertains to specific books as well as the book market. In my talk, I will present some of my reviews of manuscripts that include a comprehensive analysis of the book and the book's market. I will demonstrate how this publishing internship has helped to further develop my English major and my American Studies minor. For this talk I will focus on two novels that I feel broadened my horizons in publishing and as an English major. **PNL**

## Thomas J. Vajtay

**Advisor**: Dr. E. Todd Weber

**Title**: Is There Strain Specific Variation in the Innervation and Integration of the Optic Nerve in the Suprachiasmatic Nuclei of Mice?

**Abstract**: All animals maintain a synchrony with their environment. This synchrony regulates physiological activity in animals. In mammals, the integral component of this synchronicity is a subset of cells within the hypothalamus of the brain, the Suprachiasmatic Nuclei (SCN). The SCN is essentially a pacemaker for the body which receives input from the eye, this input resets the pacemaker. The BALB/cJ mouse strain has the novel ability to rapidly reset its behavior to a six hour advance of the light dark cycle, while C57BL/6J mice do not. C56BL/6J cannot advance their circadian activity as fast, which is more comparable to normal behavior. If the input from the eye or the activation of cells from that input somehow differed between the two strains, it could lead to a possible source for the BALB/cJ fast shifting ability. Previously we knew that Vasopressin and Vasoactive Intestinal Peptide producing cells are distributed differently between BALB/cJ and C57BL/6J. Results indicate that the retinal innervation of the SCN does not seem to be different between the two strains and neither is cell activation from light input. This seems to suggest that the behavioral discrepancy seen is more likely to be attributed to differences on the cellular level. **PSTR** and **URSA**

## Raju Venkatraman and Kirsten Grover

**Advisor**: Dr. Elaine A. Scorpio

**Title**: Comparing leadership preferences with self-perceptions

**Abstract**: Leadership has been studied for many decades, and more than 100 different definitions of leadership have been identified (Rost, 1991). There are many approaches to leadership that have evolved, changed focus and direction, and built upon one another over time. This study draws upon a recent multi-dimensional approach to leadership based on trait, ability, skill, behavior, relationship and process (Northouse, 2011). Using the lens of social psychology, this study examines leadership preferences with self-perceptions as a leader. In the first part, we used a conceptualizing leadership questionnaire to identify which of these dimensions are important when one thinks of leadership. In the second part, a self-evaluation questionnaire was used to rate these leadership dimensions based upon one's reflections of

recent success in a group setting. While preliminary results show only a moderate correlation between overall leadership preferences and self-perceptions, the results also indicate a weak correlation along the dimensions of ability, behavior, relationship and process. Additionally, the self-evaluations ratings are higher than the leadership preferences ratings across all the dimensions. This study appears to confirm our hypothesis that people prefer leaders with complimentary abilities and behaviors. **PSTR**

## Naomi Vernon

**Advisor**: Dr. Todd Dellinger
**Title**: Czech Musical Theatre
**Abstract**: Naomi Vernon accompanied Professor Todd Dellinger to the Czech Republic in August 2012 to interview various Czech arts leaders for his Fellowship, "Arts In Transition: The Former Eastern Bloc." Naomi's research in musical theatre as it pertains to this former Eastern Bloc nation is inspired and influenced by Professor Dellinger's project. During her initial study of reviving arts business in the Czech Republic, Naomi refined her research to include the history, influences from Eastern and Western nations, cultural impact, and production of musical theatre in Prague, Czech Republic. Czech musical theatre is not frozen in time due to the aftermaths of the Cold War; it is an art that continues to evolve, as the post-war generation begins to experiment with productions that do not attract the common tourist audience. Czech musicals are too often spectacle shows that lack a dance component, and repeat folklore stories that are inappropriate for the current time. With the new generation revamping the stage, Czech musical theatre is on the brink of acquiring the depth it needs to thrive as a complex theatrical art form that better embodies Czech cultural identity. **URSA**

## Tyler Wahl

**Advisor**: Dr. Roberta Clipper
**Title**: Judgment
**Abstract**: This is the first novel of a planned series of seven, which concerns the growth and development of the protagonist. The protagonist, named Van Chess, is a wealthy man who has spent the better part of fifteen years in prison after being falsely accused of the murder of his father. His wealth, which comes from the wrongful imprisonment suit, gives him peace of mind and allows him to insulate himself from the problems of the world. The world in the year 2026 has been beset by a large and thriving organized crime community. Organized crime communities around the world have become so powerful by their generous use of archaic supernatural powers. One day, Van receives an offer from a strange couple that represent an organization who intend to use these same supernatural abilities to destroy the mafia, wherever they exist. Thematically, the book deals with conflicting moralities and the clash of three power bases that represent the past, present and future. **PNL**

## Chris Werner

**Advisor**: Dr. Lucien Frary
**Title**: A Christian: The Third Reich

**Abstract**: The Nazi movement highlighted the Christian teachings in perpetuating some of the worse crimes known to humanity in modern times. Despite the allied powers demonizing Nazi ideology as alien and foreign as the war came to a close, it was in fact, politically, economically, and religiously in line much closer to the common European beliefs than the entirety of Europe would like to accept. Thus, this paper follows the early Nazi movement and cooperation of the Protestant Churches. Part II analyzes the primary and secondary sources of this paper. Part III begins with the outline of Adolf Hitler's beliefs and doctrine, and how the mind of one man shaped the destiny of an entire people. Part IV discusses the detailed accounts of the Nazi State's attempt to bridge the religious divide and spark a national renewal, following the history of the German Christians revivalism up into the Third Reich. Part V overviews Positive Christianity, intertwining into Nazi policy. Part VI dives into the arguments culminating into the creation of a unified Evangelical Protestant Reich Church. Part VII will visit Nazi attempts to re-write Christian theology after winning the hearts and minds of the people as well as a concluding modern critique in Part VIII. This paper evaluates the chronological later years in Weimar Germany until the war years in Nazi Germany spanning from the 1930 until 1939. The paper looks specifically at the Protestant Church support in pre-Hitler and post-appointment Hitler Germany. **PNL**

## Jen Whiting

**Advisor**: Rebecca Basham
**Title**: Ten Minute Play Workshop
**Abstract**: The Ten Minute Play Workshop (TMPW) idea hit me one night as a playwriting course with Professor Basham was coming to an end. Professor Basham's course focused on writing and workshopping ten-minute plays, and the group of students who were a part of the course really dug into the workshopping we did each week. I realized I had found a missing link in my writing: an audience that would help me understand what was working and what wasn't with my scripts! As the semester drew to a close, I approached Professor Basham and asked if she would sponsor a semester-long independent study project focused on workshopping. I wanted to study the craft of leading workshop sessions, and the ten-minute play seemed like the perfect length script.

The project took form during the fall of 2012. The first semester of the Ten Minute Play Workshop ran 50 sessions. You can listen to the sessions on the TMPW website, tenminuteplayworkshop.com, and as podcast episodes on iTunes (search for "tmpw"). When the project came to a close, I put what I learned about workshopping ten-minute plays into a book titled "A Student's Guide to Workshopping the Ten Minute Play." **PSTR**

## Amanda Young

**Advisor**: Dr. Gabriela Smalley
**Title**: Effects of large dorsal fins on *Betta splendens* mating selection and their ability to swim against a current
**Abstract**: Sexual dimorphism is a common phenomenon amongst terrestrial and marine organisms. This involves a phenotypic difference between males and females of the same species and can include different body shapes, fin lengths, and colorations. *Betta splendens*,

Japanese fighting fish, are known to exhibit this where the males have very large, elaborate fins and body sizes compared to the females. Many studies have found that fish of many different species choose a mate based on their size and displays. Therefore, it is beneficial for a male to be larger and have long, elaborate fins to increase their mating success. However, long fins may make swimming against a current more difficult. First, the betta fish were tested to see if the females prefer males of larger size. The betta fish were then put into a current chamber to determine if their ability to swim is affected by the male's larger fins. It was found that females prefer males that were much larger in size when given a choice. The female betta were also able to swim against a current longer than their male counterparts. This suggests that *Betta splendens* are more interested in passing on their genes to the next generation than survival. **PSTR**

## Michael P. Zubert

**Advisor**: Dr. Janet Cape

**Title**: Using Digital Audio Workstations to Enhance Learning in High School Music Education Classrooms

**Abstract**: The development of digital audio workstation software such as GarageBand has enabled students to create and interact with musical elements through a technological medium. This study investigates whether the use of GarageBand can reinforce musical elements taught in traditional music classrooms. Over the course of four weeks, six high school students participated in an after school program developed to teach music through the use of GarageBand in a series of five lessons centered on musical elements. Findings suggest that reinforcement of musical elements through technologically infused lessons transferred into the traditional classroom and that the technology offered students a wide variety of creative opportunities. From this research, a teacher aid website was produced to assist teachers with the integration of technology into their music curriculum. **URSA**

## Planned by the URSA Committee:

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Catrinel Haught
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