

# THE HONORS SCHOOL ANNUAL RESEARCH CONFERENCE

*It is with great pleasure that the Honors School  
presents its Spring 2014 Research Conference.*

*Student presenters include research in the fields of:  
Anthropology, Art, Biology, Business, Chemistry,  
Communication, Criminal Justice, English, Finance,  
Fine Art , Management, Psychology*

## **PRESENTERS**

(in alphabetical order)

Alison Abate (FA)

Chelsea Barreto (BY)

Erik Braunstein (CE)

Adriana Marie Eisele (AR)

Genevieve A. Fasano (BY)

Olivia Greco (FA)

Amanda Gruber (EN/CO)

Rachel Kenny (CO)

Katherine Latina (EN)

Rebecca Leitt (BY)

Laura Migliore (EN)

Ryan Murphy (PY)

Jonathan Murray (BUBF)

Wardha Khalid Qureshi (BY)

Hannah Rang (CJ)

Heather Siebert (CE)

Emily Grace Smith (AN)

Katelyn Walsh (BUBM)

Shannen Wilson (PY)

**HONORS SCHOOL**  
**RESEARCH CONFERENCE SCHEDULE**

**SESSION A: 1 p.m. – 3:00 p.m.**

**Opening Remarks: Kevin Dooley**  
**Dean of the Honors School**

Emily Grace Smith (AN)  
Katherine Latina (EN)  
Laura Migliore (EN)  
Rachel Kenny (CO)  
Amanda Gruber (EN/CO)  
Jonathan Murray (BUBF)  
Katelyn Walsh (BUBM)  
Alison Abate (FA)  
Olivia Greco (FA)  
Adriana Marie Eisele (AR)

**SESSION B: 3:00 p.m. - 5:00 p.m.**

Hannah Rang (CJ)  
Ryan Murphy (PY)  
Shannen Wilson (PY)  
Rebecca Leitt (BY)  
Genevieve A. Fasano (BY)  
Wardha Khalid Qureshi (BY)  
Chelsea Barreto (BY)  
Erik Braunstein (CE)  
Heather Siebert (CE)

**Closing Remarks: Kevin Dooley**

# *Welcoming Remarks*

**DR. KEVIN DOOLEY, *Dean of The Honors School***

*Presenters (in alphabetical order)*

**ALISON ABATE** | *What's So Important About Brand Design? : The Definition, Development, and Psychology of a Good Brand Identity*

Chief Advisor: Professor Karen Bright

Second Reader: Professor Patricia Cresson

When searching for a product or service, the first thing that a person is going to notice is the brand. Developing a brand identity does not only involve the visual aspect, but also the core of a product or service. It is what a product or service is and what it strives to be. While every product or service has a “brand,” some are more successful than others. This thesis explains what a brand is, what a brand does, the psychology of a brand, and what qualities make a good brand. In addition, case studies were conducted to determine which brands are well designed, may need an update, or should be completely rebranded.

**CHELSEA BARRETO** | *Carbon Sequestration of Rhizophora mangle in the Bahamas*

Chief Advisor: Dr. Pedram Daneshgar

Second Reader: Professor John Tiedemann

A solution to reduce the impacts of climate change caused by rising atmospheric carbon dioxide is to conserve and restore ecosystems that sequester carbon. Blue carbon ecosystems, which include, mangrove flats, salt marshes, and seagrass beds are coastal ecosystems that sequester carbon, which would otherwise remain in the atmosphere as carbon dioxide. While there is little known on the potential of these ecosystems to store carbon, early work suggests that blue carbon sinks may store more carbon than terrestrial carbon sinks. Unfortunately, these ecosystems and mangrove flats in particular, are being destroyed at high rates for development. Should research show that mangrove flats serve as large carbon sinks then it becomes essential to conserve these ecosystems. The primary objective of this work was to determine how much carbon is currently stored in dwarf red mangroves, *Rhizophora mangle*, in The Bahamas. In addition, site-to-site differences in carbon storage will be compared and explained. In October of 2012, four sites were selected in Eleuthera, The Bahamas attempting to maximize site variability. All sampling was done from six 7 by 7 plots established at each site. Carbon storage was determined from plant biomass, which was extrapolated from plant volumes. Mangrove volumes were determined from growth parameters. In each plot, leaf numbers were estimated, mangrove individuals were quantified, and soil depth was determined. It was observed that there were large differences from site to site in number of individuals, soil depth, and biomass accumulation. The site with the greatest primary productivity also had the greatest soil depth likely making it the greatest carbon sink. It was observed that sediment depth was not necessarily a predictor of productivity as sites that lacked sediment were still productive. Future work will explore carbon sequestration in sediment and determine what factors predict productivity.

**ERIK BRAUNSTEIN** | *Computational Modeling of the Peridinin-Chlorophyll Protein Complex*

Chief Advisor: Dr. Dmytro Kosenkov  
Second Reader: Dr. Gregory Moehring

In recent years, there has been much advancement in improving solar cell technology, and one of the areas being explored is the development of technology based on photosynthetic systems found in nature. One of the most promising models in this field uses the peridinin-chlorophyll-protein (PCP) light harvesting complex. The PCP complex has a very well-studied structure and high efficiency for collecting energy. It contains 1:4 ratio of chlorophyll to peridinin molecules. Peridinin molecules belong to the well-known carotenoid pigment family. The energy of light is absorbed by peridinin molecules leading to the formation of electronic excited states and then transferred to the chlorophyll molecule of the PCP. Peridinins also play a pivotal role in quenching chlorophyll triplet excited states preventing formation of harmful oxygen radicals; protecting the entire complex from photodamage. In the present study, the electronic excited states of the chlorophylls and carotenoids (peridinins) that form PCP complex are investigated using time-dependent density functional theory (TDDFT). The rates of excitation energy transfer between chlorophyll and peridinin molecules are estimated using Förster dipole-dipole model.

**ADRIANA MARIE EISELE** | *The Love of Looking*

Chief Advisor: Professor Mark Ludak

"The Love of Looking" examines scopophilia and voyeurism through extensive research on psychoanalysis, dreams, and human instinct. This thesis contains a series of photographs that portray a wide range of content relating to scopophilia and voyeurism. Stereoscopes are devices that were originally used in the 1800's as an instrument for viewing photographs. Similar devices were built for this thesis with the intent of providing a space for a viewer to examine the photographs in a private and more intimate setting. The images are intended to evoke a desire or curiosity within the viewer. The images were created to make the viewer, or voyeur, aware of these desires and curiosities they may feel, and to potentially allow for a better understanding of the human desire to look.

**GENEVIEVE A. FASANO** | *Effects of Lipopolysaccharide-induced Inflammation on Hypoxic and Inflammatory Gene Expression Pathways in the Rat Testis*

Chief Advisor: Dr. Michael Palladino  
Second Reader: Dr. Ellen Dose Pepe

"Research in male reproductive biology is vital to better understand infertility, cancers of the male reproductive tract, erectile dysfunction, and fetal development. Inflammation of the male reproductive tract by bacterial infections is known to suppress androgen production and can result in infertility. The goal of this work was to determine effects of inflammation on hypoxic and inflammatory gene expression pathways in the rat testis. Inflammation in male retired breeder rats was accomplished via intraperitoneal administration of lipopolysaccharide (LPS) from *P. aeruginosa*. RNA was isolated from testes and cDNA synthesized for qPCR arrays of hypoxic and inflammatory genes. Five genes in the hypoxic pathway were up-regulated following 3 hours of inflammation, and 3 genes showed elevated expression after 6 hours. No genes in the hypoxic pathway were down-regulated. Inflammatory array results demonstrated that 11 genes are up-regulated after 3 hours and one gene is down-regulated. After 6 hours, 12 inflammatory genes were up-regulated. Overall, two subsets of hypoxic and inflammatory genes were up-regulated 3 and/or 6 hours following LPS treatment. Future studies will involve functional analysis of these genes to further elucidate the protective molecular mechanisms at work in the male reproductive tract in response to bacterial infection."

## **OLIVIA GRECO** | *Influencing Environmental Sustainability through Graphic Design*

Chief Advisor: Professor Patricia Cresson

Second Reader: Professor Karen Bright

Many human interactions with the planet within the interconnected ecosystems threaten environmental stability, especially as we evolve and find greater need to consume natural resources. Projecting sustainability as a possibility rather than a burden lies in the hands of those who can influence change by challenging people to think differently. Graphic design is an outlet to engage others in change through visual communication, and it is a tool for social innovation, specifically in provoking a new understanding of sustainability. Creating a system of learning that would engage a group of individuals on a small scale sets a strong foundation for social innovation.

## **AMANDA GRUBER** | *An Analysis of Augusten Burroughs's Dry Grounded in Genre & Trauma Theory*

Chief Advisor: Dr. Frank Fury

The present study titled, "*An Analysis of Augusten Burroughs's Dry Grounded in Genre and Trauma Theory*," is an examination of Burroughs' memoir and explains how the text provides a means of social support for its audience. An analysis of this particular memoir calls for the dual use of genre and trauma theory to fully understand the interaction between the literary theories, and how they relate to *Dry*. The memoir genre is principally effective in expressing traumatic events because it provides memoirists with an intimate setting to discuss their personal experiences. Both genre and trauma theory are necessary theoretic lenses, because they aid in a more complete, thorough understanding of *Dry* and similar memoirs.

## **RACHEL KENNY** | *Millennials, News, and New Media: What Makes Social Media a Preference?*

Chief Advisor: Dr. Marina Vujnovic

With internet and mobile technology consistently increasing and improving, the flow of information in today's society has changed. More individuals are choosing to access news stories from social media sites. Specifically, young adults are turning away from traditional news sources, like broadcast television and print newspapers, and turning towards their online social networks. An in-depth literature review explores previous research on young adult's social media use, social media use by news organizations, and the aspect of avoiding third-party bias by using social media to communicate with publics. The main purpose of this paper is to explore the specific reasoning why young adults are choosing social media as a news source. This thesis shows the results of original research that aimed to answer four research questions: RQ1) Which characteristics of Facebook make it an appealing news source? RQ2) Which characteristics of Twitter make it an appealing news source? RQ3) Which characteristics of YouTube make it an appealing news source? RQ4) Which characteristics of Instagram make it an appealing news source? A survey was administered to college students between the ages of 18 and 29 during the Spring 2014 semester.

**KATHERINE LATINA** | *“You’re not one of the family, but you’re not one of us either:” Anxieties of Surrogate Motherhood in The Turn of the Screw*

Chief Advisor: Dr. Lisa M. Vetere

In this critical examination of the governess in Henry James’ novella *The Turn of the Screw*, I focus on the dangers and anxieties attributed to surrogate motherhood. Various characteristics of the traditional Victorian governess (she must be educated, from a respectable family with recent financial ruin, cannot get married, educates the daughter of her employer, and may have a financial obligation to her family at home) may lead to stress that is difficult to endure. Given the context of a 19<sup>th</sup> century governess and the fact that James’ governess has no prior experience, it is evident from her narration that she struggles with the expectations of a woman in her position. As a way of coping with her anxieties, she clings to the two children who are under her charge, and obsessively looks after them from a strict motherly eye. Extremely incompetent in her new position, the governess manifests two strangers during times of distress. These manifestations serve as judgmental, challenging beings, which make the governess second-guess her performance as a surrogate mother. The governess is more concerned with her fantasy of motherhood than she is with her actual duties, which are to provide an education to the children. When her constructed reality is threatened by outside forces, she retaliates by killing one of the children.

**REBECCA LEITT** | *Distribution and Abundance of Acartia spp. in Barnegat Bay*

Chief Advisor: Dr. Ursula Howson

Second Reader: Dr. Kathryn Lionetti

Barnegat Bay is a large estuary in New Jersey (3,525 km<sup>2</sup>) that is home to a diverse community of plants, animals, and microscopic organisms. Of these organisms, one of the most ecologically important groups in the bay is copepod zooplankton. Barnegat Bay contains many species of copepods that are essential for a proper balance of the food chain in this estuarine system. One of the most influential genera of copepods in this system is *Acartia*; members of this genus play a crucial role in the plankton community dynamics of Barnegat Bay. The abundance of *Acartia spp.* was assessed in Barnegat Bay from May of 2012 until December of 2013. *Acartia spp.* showed the highest abundance in late November of 2012. This increase in abundance is most likely due to the re-suspension of copepod cysts in Barnegat Bay sediment as a result of Hurricane Sandy, which hit the New Jersey coast in late October of 2012. Smaller blooms of *Acartia spp.* throughout the duration of the study are likely a consequence of phytoplankton blooms in the area as well as seasonal changes.

**LAURA MIGLIORE** | *An Analysis of The Great Gatsby through the Lens of Celebrity Culture*

Chief Advisor: Dr. Frank Fury

For a novel that was, at the time of its 1925 publication, essentially dismissed or denounced, garnering confirmation from only a select few, *The Great Gatsby* is now considered a great, if not the greatest, American novel. A substantial amount of criticism surrounds this work as, for decades, scholars have attempted to interpret it through various political, historical, and literary channels. However, what my research on this novel has exposed is a gap in the study of the connection between *The Great Gatsby* and celebrity culture, which I attempt to address in my thesis. I do so by exploring the 1920s culture presented in the novel, specifically the societal structure and norms of the time, as well as by analyzing the character of Jay Gatsby, his rise to celebrity status, and his motivations for becoming a celebrity. In addition, I discuss the themes presented in the novel that correlate with celebrity culture, such as the American dream, wealth, and materialism. With my thesis, I hope to provide a unique, in-depth understanding of F. Scott Fitzgerald’s novel that will resonate with today’s society.

## **RYAN MURPHY** | *Investigating the Influence of College Experiences on Self-Perception*

Chief Advisor: Dr. Gary Lewandowski

This study examined the influence of college program orientations on self-perception. After completing the necessary orientations and program preparations for either a Study Abroad Program or Alternative Break Trip, 53 students (40 female, 13 male) completed surveys assessing levels of self-expansion, inclusion of communities in the self, psychological sense of community, and satisfaction with their university. Students who completed the program preparation for Alternative Break Trips reported significantly higher levels of inclusion of community in the self (specifically for their university), as well as higher levels of psychological sense of community (specifically for a foreign developed and foreign undeveloped country) than students who completed the orientations for Study Abroad. After reviewing the differences between the programs' orientations, the results suggest that college programs with more frequent preparation meetings and a focus on cultural aspects of the destination country relates to students being more inclusive of various communities.

## **JONATHAN MURRAY** | *Made in China: The Necessity of Independent Labor Unions in China*

Chief Advisor: Dr. Patrick O'Hallorran

The purpose of this paper is to investigate the current state of Chinese labor and to show how independent labor unions would improve the lives of the Chinese working population. Within this paper, several questions are considered. Does the current Chinese labor union, the ACFTU, truly benefit Chinese society? What would the effects be on Chinese workers and the rest of the world if unions truly represented the rights of all workers, including migrant workers? Evidence presented herein will show that if a truly independent labor unions were implemented in China, then all Chinese workers, including migrant workers, would receive better benefits, wages, hours, and protections from their employers.

## **WARDHA KHALID QURESHI** | *Combating The Antibiotic Resistance Threat*

Chief Advisor: Dr. James Mack

Second Reader: Dr. Albert Rojzman

Modern day bacteria have developed an ability to resist antibiotics that were previously successful. There is an increasing concern to address this problem in healthcare settings, especially in underdeveloped countries where access to antibiotics is limited. These Gram-positive and Gram-negative antibiotic resistant pathogens can cause severe to fatal infections. Our research focused on five of the most problematic bacteria: Methicillin-resistant Staphylococcus aureus (MRSA), Methicillin-sensitive Staphylococcus aureus (MSSA), Acinetobacter baumannii, Klebsiella pneumoniae, and Pseudomonas aeruginosa. For hundreds of years, home treatments have relied on the use of essential oils to treat ailments. We tested four commonly found essential oils and discovered that wintergreen and cinnamon showed the best antibacterial properties against the five tested bacteria. Methylglyoxal, an ingredient in Manuka honey, was also tested and it showed strong antibacterial activity. To test these compounds, we used the Kirby-Bauer disk diffusion method and measured the diameter of the zone of inhibition for each bacterium. We also investigated the way to deliver these antibacterial compounds to patients, as topical applications, to inhibit the transmission of these multidrug resistant bacteria in healthcare settings. We found that lanolin, Aloe Vera oil and Aloe Vera gel served as effective carriers for the essential oils and methylglyoxal. Our results may offer a cost-effective alternative to commercial antibiotics because these compounds are readily available and inexpensive and could be a benefit globally.

**HANNAH RANG** | *The Relationship Between Reactive Attachment Disorder and Antisocial Behavior in Young Adults*

Chief Advisor: Dr. Michele Grillo

Social relationships are an unavoidable and necessary component of life. The ability to interact in socially appropriate ways with family, friends, and strangers enables people to function normally within society. Sometimes, however, the ability to navigate social relations is compromised by something out of a person's control. In this case, the overriding factor is reactive attachment disorder (RAD). Reactive attachment disorder has only been recognized since 1980, when it was first listed in the DSM III, the third edition of the Diagnostic and Statistical Manual. RAD is defined in the newer edition of this manual, the DSM-IV A, as "markedly disturbed and developmentally inappropriate social relatedness" (Zeanah 2010). This disorder primarily affects adopted children, as well as those in foster care. The RAD diagnosis is rooted in a child's early life experience. Specifically, this disorder stems from a lack of proper care in infancy or early childhood, termed pathogenic care in severe cases. Researchers utilize attachment theory to explain the effects of improper care on young children, specifically the function of an early caregiver as the model for a child's subsequent relationships. RAD prevents individuals from forming authentic relationships, which triggers social, emotional, and behavioral issues. Without effective treatment, RAD will remain with an individual throughout their life. Because of the implications that this disorder has later in life and the lack of research about RAD past early childhood, the current study will examine the manifestations of RAD in college-aged students, particularly with respect to antisocial behavior.

**HEATHER SIEBERT** | *Synthesis of a Ligand Bridged Bimetallic Teeter Totter Compound to Prepare a More Efficient Catalyst*

Chief Advisor: Dr. Gregory Moehring

Second Reader: Dr. Dmytro Kosenkov

The work presented in this thesis focuses on studying a unique type of rearrangement called pseudorotation. In addition this work aims to synthesize a target molecule called a ligand bridged bimetallic teeter totter, which has the potential to be a more efficient catalyst. Preliminary results suggest that the synthesis of the ligand bridged bimetallic teeter totter was successful. Pseudorotational rearrangements are atomic rearrangements which produce a new steric relationship without breaking or forming any new bonds. This type of rearrangement could be utilized to prepare a catalyst which has dynamic electronic and steric states which are dependent upon the position of bulky ligands during pseudorotation. The compounds synthesized in this thesis are dodecahedral rhenium (V) polyhydrides with various aromatic amine ligands. These compounds are synthesized under a nitrogen environment through melt or reflux reactions. Once the compounds are synthesized they are characterized with  $^1\text{H}$  NMR,  $^{31}\text{P}$  NMR and IR. Throughout this project multiple new compounds were synthesized, including the ligand bridged bimetallic teeter totter. This compound contains an eight coordinate rhenium center attached to a square planar rhodium center by a pyrimidine ligand bridge.

## **EMILY GRACE SMITH** | *An Examination of Personhood and its Manifestation Among the Ancient Maya*

Chief Advisor: Dr. Edward Gonzalez-Tennant

The concept of personhood is a fairly new topic in regards to the field of Archaeological study; however it is one growing quickly and feverously. Due to the popularity of Mesoamerican archaeology in the 1920s and 1930s the majority of the research was performed during this window of time. Due to this fact the research has been based upon theoretical concepts and definitions that are now considered antiquated in the anthropological community. The use of this terminology in the examination of ancient, as well as modern cultures, results in research that carries an air of ethnocentrism; being so the research that has been done has been lopsided or resulted in unsatisfactory results. This paper works to address this issue of definition misattribution particularly in relevance to the culture of the ancient Maya. Upon constructing a proper definition of personhood, taking into consideration the structure of the society and forming it to most closely fit the concept as would be conceptualized by these ancient people, it proceeds to examine personhood as represented in material evidence, specifically art and burials as referenced in the archaeological record. This examination, which had been done to assure the definitions have not had an adverse effect upon the analysis in the past and found they originally had, is used to attempt to rectify this misattribution of information. This current study found that the societal conceptualization of peers, and other unrelated individuals, as represented in professional art offers a view into the social status, gender, familial ties, and utility as perceived by the society. In comparison, however, when examining graffiti pulled from the Temple of Inscriptions in Tikal, a very commoner perception of personhood can be examined. A very similar, almost identical, separation and representation is experienced through the examination and comparison of both commoner and royal burials. When looked at holistically it can be seen that the conceptualization of personhood among the ancient Maya relied upon a number of societal aspects separate from the westernized conceptualization of the individual, and more closely related to the idea of society as an agent on its people.

## **KATELYN WALSH** | *“Credo (In)Consistent Behavior: A Corporate Culture’s Struggle With Permeating Into Its Subsidiaries”*

Chief Advisor: Dr. Scott Jeffrey

“Credo (In)Consistent Behavior” is a qualitative case study of Johnson & Johnson’s corporate culture that examines the difficulty of a culture transfer within its acquisitions. Johnson & Johnson’s historical events that demonstrate behavior according to the corporation’s Credo are compared to the recent major product recalls. These events are documented from news and journal articles, company websites, financial reports, and a personal interview. This comparison is used in order to develop an explanation and analysis as to why the culture transfer of the company’s Credo may have been unsuccessful and therefore unable to permeate into the family companies of Johnson & Johnson. Overtime, Johnson & Johnson has added a significant amount of volume and complexity to its company, as more and more family companies are acquired. As a result, the key factors that have potentially prevented a successful culture transfer have been determined to be a change in employee commitment, the mergence of different cultures, governance structures, and other miscellaneous factors. Understanding these factors and the reasons as to why Johnson & Johnson was unprepared for growth are critical in order for the company to reinstate the importance of the Credo and its responsibilities into its family companies.

**SHANNEN WILSON** | *Two-Sided Dental Experience*

Chief Advisor: Dr. Lisa Dinella

This study examines how congruent patient self-rated dental anxiety scores are to dentist ratings of a patient's dental anxiety. A sample of 22 male and 48 female patients at a dental office completed a survey assessing levels of dental anxiety. The practicing dentist filled out the same survey reporting as he thought his patient would have in the waiting room. An independent samples t-test revealed there was a significant gender difference in that females reported having higher dental anxiety than male patients. Although opposite in the direction the researcher predicted, a paired samples t-test revealed there was also a significant difference between patient and dentist ratings of dental anxiety in that dentists reported patients as having higher dental anxiety than patients reported having. Using a hierarchical regression analysis it was determined that gender significantly added to the increased variance of dentist ratings from patient ratings. The results were interpreted to indicate that the overestimation of dental anxiety by dentists was higher for women than for men. These findings suggest that the dentist is inaccurately predicting his patient's dental anxiety.

*Congratulations to all of our  
Honors Graduates.*



In Memory Of  
Jane Miller Freed  
1929-2013



Summa cum Laude, 1982  
Anthropologist and Archaeologist  
Generous Benefactor, Role Model, and Mentor to Numerous Students In  
The Honors School and Women's Field Hockey  
mens sana in corpore sano

*Thank you, Jane,  
for your support and  
encouragement throughout the years.  
You will live forever in our hearts.*

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