Angelo, Danielle M.
Political Science
*Political Ideology as a Predictor of Judicial Decision-Making*
Advisor: Adam Silver, Ph.D.

In describing how Supreme Court justices make decisions, research in recent decades has shifted focus from a legal model to an extralegal model, which places greater emphasis on political and behavioral influences. This paper adopts the latter approach to examine the relationship between political ideology and judicial decision-making. Utilizing the idea of ideological polarization, I seek to demonstrate trends in voting habits pertaining to ideological extremities on the Court as well as relate this to the strategic decision of appointing a majority opinion author. Unlike previous research, this study examines the Roberts Court across a variety of constitutional issues to suggest that the political ideology of justices is indeed a prominent contributing factor to judicial decision-making, showing greater ideological polarization in divided cases rather than unanimous outcomes. Based on these results, I also present a prediction for a recently argued Supreme Court case.

Batista, Eric
Biology
*Presence of Donor Reactive Antibody after Induction of Mixed Hematopoietic Chimerism and VCA Transplantation*
Advisor: Josef Kurtz, Ph.D.

Current standards of post-transplant treatment include an extensive regimen of immunosuppressive drugs. These medications compromise immune function and increase the patient’s susceptibility to infection. Induction of tolerance provides a method to successfully perform transplants and minimize the use of harmful medications. Establishment of mixed hematopoietic chimerism allows for the indefinite survival of fully major histocompatibility complex (MHC) mismatched vascularized composite allografts (VCA). This chimerism model has proven to induce T cell tolerance determined through mixed lymphocyte reaction and cell-mediated lympholysis assays however, the effect on B cells has yet to be established. In this study we assessed B cell responses to both chimeras and control animals through serum antibody binding assays as well as antibody-mediated complement-dependent cytotoxicity assays. We demonstrated that VCAs induce a robust antibody response when rejected, where as tolerant animals do not produce allospecific antibody.

Baxter, Elizabeth E.
Psychology
*Academic Delay of Gratification, Emotion Regulation, and Mindfulness: Implications for Academic Functioning*
Advisor: Helen MacDonald, Ph.D.

Delay of gratification is the ability to forego an immediate reward in favor of a more rewarding but delayed outcome and has implications for future success in a variety of domains. The relationship between academic delay of gratification (ADOG), mindfulness, and emotion regulation warrants investigation because there is limited research examining these constructs in an academic setting. We investigated the association between ADOG, mindfulness, and emotion regulation in a sample of 200 college students. We hypothesized that facets of mindfulness would be positively related to ADOG and emotion regulation, and that ADOG would predict GPA and academic satisfaction. Results of the present study indicated that there is a strong positive association between facets of mindfulness, ADOG, and emotion regulation. Furthermore, regression analyses indicated that ADOG significantly predicted GPA and academic satisfaction. Results suggest that ADOG and mindfulness play a key role in the academic success and experience of college students.
Bleier, Allison G.  
Sociology  
Perceived Barriers to Women’s Corporate Advancement  
Advisors: Catherine Simpson Bueker, Ph.D. and Katrin Križ, Ph.D.

Today women comprise almost half of the labor force in America, yet they occupy a small percentage of top corporate positions. This study investigates barriers that Americans perceive to limit the number of women in these positions and the role that race and gender play as predictors of these barriers. A sample of 1,933 Americans from the Pew Research Center’s dataset on Gender is used to conduct bivariate analyses, which revealed that women generally perceived barriers more strongly than men. Race proved to be a predictor of many barriers, but cannot be generalized across all barriers in this study. Multivariate analyses revealed that some barriers were predicted by race more than gender and others by gender more than race. For example, Black men perceive some barriers more similarly to their race than gender. This study can help explain the inequality in society and aid the creation of future policies.

Boudreau, Katelyn M.  
History  
Austin T. Levy: Progressive Capitalism and its Effects on a Small New England Town’s Development  
Advisor: Jeffrey Fortin, Ph.D.

This work will focus on the life of Austin T. Levy a notable figure in twentieth century business, particularly in the small mill town of Burrillville, Rhode Island. Levy was the owner of the mills that made the town boom economically throughout the Great Depression and World War II. This success was due in large part to Levy’s unique business model of paternal capitalism, in which he treated each of his employees as though they were a member of his family. Through this model Levy was able to create a community that never existed before. Levy has largely been forgotten to history, but will be approached in this work in an effort to showcase the strengths of his business acumen and philosophies.

Brady, Ryan P.  
American History  
Slavery’s influence on the settlement of the Western United States  
Advisor: Jeffrey Fortin, Ph.D.

How the sectional rivalry between the northeastern and the southeastern United States influenced western settlement, specifically the admission of western states. Slavery was at the heart of the sectional rivalry and the South vehemently defended it, while the North lobbied for it to be abolished, not from the South, but only from the American West. The South believed that if the territory where slavery existed was expanded to compete with the North’s economic system that the North would eventually abolish it. This fear drove southern politicians to fight for slavery’s expansion which greatly influenced the settlement of western territory and admission of American states west of the Mississippi River.

Carland, Patrick J.  
English Communications  
I Am Not A Machine: Remapping Discourse in Postmodern Japanese Media  
Advisor: Christopher Craig, Ph.D.

The aftermath of the 1989 economic recession in Japan, as well as the subsequent “Lost Decade” for of the 1990s and 2000s, have generated profound social and cultural change throughout Japanese society. Concurrent to these changes have been the rise and internationalization of Japanese popular media, which hitherto has been read as largely apolitical and formed externally to changing socioeconomic conditions. In this paper, three specific Japanese new media texts, the 1995 series Neon Genesis Evangelion, 2008’s Kaiba, and the video game Yume Nikki, are analyzed in relation to post-1989 social
and economic change, and ultimately suggest a new, youth led subculture emerging from the Lost Decade, one that uses new media and discursive techniques to engage and critique contemporary social and political issues.

Caron, Nicole R.
Biology
Role of NMDA Receptors in the Development of Hypothalamic Leptin-Response POMC and AgRP/NPY Neurons
Advisor: Christian Bjorbaek, Ph.D., Beth Israel Deaconess Medical Center

Millions of people are affected by obesity in the United States. In the brain, glutamate binds to the NMDA receptor NR2B in proopiomelanocortin (POMC) and agouti-related peptide/Neuropeptide Y (AgRP/NPY) neurons. These neurons are involved in regulation of food intake. In the absence of glutamate, the homeostasis of food consumption is disrupted. Without NR2B, the neuron is less excited and fewer neuropeptides are secreted. In a previous study, the weights of mice with and without NR2B deletions were measured, and there was a significant weight loss in mice with an NR2B deletion in AgRP/NPY neurons. Based on the data, it is proposed that these mice will have neurons that will secrete less neuropeptides, and the lack of NR2B may affect the axon length. If there is no change in the number of neurons, it is concluded that without NR2B, the cells are present but unable to excite, and therefore unable to secrete neuropeptides.

Connolly, Heather M.
Education
The Science of Teaching: The Benefits of an Effective Science Program in the Elementary Classroom
Advisor: Fiona McDonnell, Ed.D.

While student teaching, I witnessed the immense benefits that an effective science unit can have in the elementary classroom; however, a survey of the school revealed that science is often neglected in all elementary grades. In response to the lack of science, I created four lessons for a fourth grade electricity unit that I taught in an afterschool program at Mother Caroline Academy in Dorchester. I created lessons that engaged students in guided inquiry and I collected video clips, work samples, and field notes from the eight fourth-graders participating in the after school program. After analyzing the data, I found evidence that this project facilitated development in the cognitive, social, and affective domains. Development in these areas creates overall academic achievement and demonstrates that participated in inquiry-based science is invaluable to the success of all learners.

Couture, Caitlyn
Biology
Investigating Yes-Associated Protein (YAP) and Phosphorylated YAP (p-YAP) Levels in Regenerating Rat Liver after Partial Hepatectomy
Advisor: Khashayar Vakili, Ph.D., Institute for Neurodegenerative Disease, Massachusetts General Hospital

The liver is the organ that can regenerate in the body. The Hippo pathway has been stated to play a role in organ size regulation. One of the components of this pathway is Yes-associated protein (YAP) which is a transcriptional co-activator. If YAP is phosphorylated it remains in the cytoplasm instead of being located in the nucleus. In order to determine if p-YAP levels decrease in regenerating liver, Western Blot analysis was done on regenerating liver tissue from rats. The tissue samples were analyzed at 1, 3, 7, and 21 days after partial hepatectomy. The levels of YAP and p-YAP were measured in these samples.
Couture, Chelsea A.
Communication & Media Studies
“Girls just wanna have fund$”: College-aged women, work, and women’s issues in Cosmopolitan magazine
Advisor: Andrea McDonnell, Ph.D.

Cosmopolitan magazine is known for its highly sexual content; yet, it is Cosmo’s “Fun, Fearless Female: Work and News” section that directly speaks to the magazine’s target audience, college-aged women in their early to mid-twenties, as they are entering the work force. While Cosmo appears to take the issues of work, money, and news and bring these topics into the realm of the public sphere, the content in this section reinforces women’s place in the private sector, supporting traditional gender roles. Drawing from theories of the public and private spheres and considering women’s role in the workforce today, I analyzed the Work and News section in four consecutive issues of Cosmo magazine. My analysis of the visual and textual evidence found in these issues demonstrates that Cosmo perpetuates traditional gender roles and is in fact not progressive for women who wish to have their voices heard in the public sphere.

Crawford, Alexandra G.
Psychology
Examining Sex Differences in Leadership Styles with Children 3 - 5 years old
Advisor: Joyce Benenson, Ph.D.

The purpose of the current study was to investigate sex differences in leadership styles within children ages 3-5. The study consisted of 23 male and 22 female children. Children instructed two puppets to color a drawing. One puppet followed all commands correctly while the other made a mistake every other command. Contrary to prior literature the study found no significant differences in number of words used and number of commands directed at the puppets. Boys rewarded the correct puppet significantly more than the incorrect whereas girls rewarded both puppets maximally. However girls disliked the incorrect puppet significantly more than boys, while both sexes liked the correct puppet similarly. Results suggest that girls and boys are just as likely as boys to give commands and rewards however girls are more likely to dislike the puppet who did not follow their directions.

Day, Rebecca M.
Political Science
Human Security: How do Turkey’s Kurds Measure up?
Advisor: Lenore Martin, Ph.D.

By concentrating on the issue of the Kurds in Turkey this paper will look at the success/failure of Turkey as a state through the lens of human security as defined by Martha Nussbaum. The paper will examine the ten central capabilities of Nussbaum’s capabilities paradigm and apply them to the four most crucial issues to the Kurds today: structural issues, political issues, developmental issues, and cultural issues.

DeCicco, Corinne L.
Biology
Investigating the Localization and Biological Function of DER GTPase in E.coli
Advisor: Paul March, Ph.D.

DER is a GTPase, known to be an essential protein in bacteria but it’s biological function still remains ambiguous. DER is distinct from all other GTPases in its ability to bind and hydrolyze two GTPs in its unique tandem binding domains. By utilizing the TAGIT method, our lab was able to create DER-GFP fusions into an open reading frame. By creating these fusion proteins in both wild type DER and mutants of the protein, we were able to transform competent cells successfully and visually watch, by time-lapse microscopy, localization of the DER protein when induced with IPTG. By comparing localization of DER wild type to each mutant, we are able to begin to gain an understanding of how DER may function and these results will be presented. Further understanding of DER’s function may lead way to a new target for antibiotics, as DER is specific and essential in all bacteria.
Migration of macrophages into the CNS during a non-disease state is an area of research with the potential for significant clinical implications. We have established a mixed hematopoietic chimerism mouse model that allows for the study of macrophage engraftment into the CNS parenchyma. Chimerism of blood and brain tissue was assessed by flow cytometry at various weeks post-BMT, as well as expression of MHC class II and Ly6C on both donor and recipient cell populations. Iba-1+/GFP+ expression were visualized along with general cell morphology using immunofluorescence microscopy. It was found that ~40% of hematopoietically-derived infiltrating macrophages expressed MHC class II and Ly6, whereas non-donor derived showed no Ly6C expression and ~2% MHC class II expression. Iba-1+/GFP+ cells closely resembled the morphology of resident microglia by immunofluorescence microscopy. These data suggest that bone marrow-derived macrophages infiltrate the CNS in a non-disease state, change their phenotype, and adopt a microglial morphology.

Alcohol use is highest among 18- to 25-year-olds in the U.S., and is even higher within college students. Research has demonstrated that alcohol consumption among U.S. college students is influenced by cognitive (e.g., perceptions of others’ alcohol use) and environmental factors (e.g., living situation). Little is known about how these factors may influence drinking patterns in Irish college students, whose alcohol use is higher than that of U.S. students. The present study collected data in Dublin and Boston to investigate alcohol consumption both within and between the two large university cities. A total of 119 participants (59 from Dublin and 60 from Boston) were surveyed and perceptions of peers’ and close friends’ drinking habits, as well as living situations (i.e., on- and off-campus), were examined in relation to individuals’ own drinking habits. Findings from this study, their implications, and future research directions will be discussed.

During times of conflict, a state undergoes many social, political, and economic changes. In a world where true gender equality has yet to exist, it is important to acknowledge the unique impacts on women. The focus of this paper is on the emergence of women’s organizations during times of conflict and the factors leading to the success of said organizations during the resolution and post-conflict period. Social, political, and economic changes that come about during times of conflict provide the fuel and platform for these organizations to form. Women’s organizations hold up during the resolution and post-conflict period only under certain conditions. These conditions include assistance from the international community and certain political conditions within their state. To examine the rise and success of women’s organizations more closely, this paper will focus specifically on groups in Latin America.
In strain B2H-GFP we have modified a transcription-activation based bacterial two-hybrid assay whereby a successful protein-protein interaction yields production of the gfp reporter gene. In pilot tests we have shown that strain B2H-GFP can be used for fluorescence-activated cell sorting (FACS) enabling the separation and substantial enrichment of cells harboring productive protein-protein interactions. Moreover, we show the utility of GFP as a reporter by optimizing an agar plate-based screen that enables the detection of cells harboring productive protein-protein interactions based on colony fluorescence. We have used this plate-based assay to investigate the binding determinants for E. coli proteins that interact with RNAP, by utilizing a library of 37 surface-exposed fragments of RNAP. Among our findings we propose the RNAP-binding site for the protein YfdN, a homolog of PerC that is involved in virulence gene regulation in pathogenic strains of E. coli.

**Drapcho, Kerry R.**
Graphic Design & Technology  
*Thabo: Empowerment with Education, Designing a Charity Using Pride and Positivity*  
Advisor: Erich Doubek, Ph.D.

In May of 2014, I participated in a service-learning trip to Southern Africa where a new culture sparked me to create change. The most inspiring person I met was Thabo, whose name originates from the Zulu tribe meaning happiness. With my branding project, I decided to create a charity named after his generous spirit. *Thabo: Empowerment with Education* is a foundation that works to combat current trends of nonprofit advertising such as using pictures of starving children in desolate conditions. This is demeaning and degrading to the people. *Thabo* stimulates donations for Swaziland’s Emachegwini Primary School using advertising tactics of pride and progress. While the students embrace empowerment in their culture, community, and lifestyle, a major force is lacking, self-empowerment through education. The design of *Thabo* focuses on using positive imagery, to create a brand with an uplifting message while targeting audiences for donations to enhance Emachegwini’s education system.

**Ericson, Amanda H.**
English Communication, Media, and Cultural Studies  
*From Children to Adults?: The Labor of Geek Love in the Contemporary American Family*  
Advisor: Christopher Craig, Ph.D.

The phrase “traditional American family” generally invokes widely accepted and longstanding images of parents and children seeped in Americana. Katherine Dunn's novel *Geek Love* challenges the notion of a traditional family and postulates the creation and maintenance of a seemingly “natural” family state as a product of labor relations of capitalism. Using both the novel and a historical overview of the American family in relation to labor reveals the constructs of adult/child roles to be inherently ideological. The depiction of a mutated nuclear family in *Geek Love* considers the figure of the Child as absolute, the definition of one role through the existence of the other, and function of the privacy of choice seemingly allotted to personal, family life. Ultimately, both the labored organization of familial relations and the traits assigned to adulthood/childhood function as ideological mystification to maintain the present hierarchy of control.

**Ferguson, Charles G.**
Performing Arts  
*Get Thee to a Nunnery: Shakespearean insults for the Modern Age*  
Advisor: Scott Gagnon, M.A.

The words of Shakespeare are over 400 years old and have varying levels of interest. Some feel as if his use of poetry is far too daunting to appreciate. Many of the most famous Shakespeare plays are filled with wonderfully witty and clever insults. Through examination and presentation of scenes from Shakespeare’s works, the accessibility of his works will be shown, because Hamlet is not just for the highly intellectual. Everyone went and enjoyed these plays, because beneath the poetry, lies plenty of relatable material.
Gambardella, Gianna E.
Psychology: Counseling and Health Concentration
*Associations Between Personal Characteristics and Sex Segregation in Women’s Online and Offline Friendships*
Advisor: Clare Mehta, Ph.D.

This study investigated sex segregation in women’s offline and online friendships. We also examined whether personal characteristics including extroversion, gender-typed personality traits, and gender-reference group identity were associated with online and offline sex segregation. Female undergraduate students (n=115) completed electronic surveys. Participants’ Facebook friends and wall posts were also coded for sex of friend. Results indicate that there was greater sex segregation in online friendships than offline friendships. Additionally, gender-reference group identity and femininity were associated with offline sex segregation. Gender-reference group identity was associated with online sex segregation. This suggests that sex segregation functions differently in offline and online contexts.

*Garrity, Jennifer S.*
Elementary Education
*Learning about Reaching All Students While Student Teaching at the Harrington School*
Advisor: Christine Leighton, Ed.D.

This past year, I completed my student teaching practicum in the first grade at the Harrington School in Lynn. I also completed my special education practicum there in the kindergarten, first, and second grade this past spring. These classrooms followed an inclusion and immersion model. I am inspired by the resilience of students who learn despite language barriers and learning challenges. My practicum experience taught me how to reach all students’ needs and challenge all students in the classroom through small group instruction. I also learned how beneficial teacher and parent collaboration can be. This presentation will give insight on my experience as a student teacher through the themes of teaching for social justice, teaching as an agent of change, and reaching and teaching diverse populations. I will also share my plans and aspirations as a future educator.

*Geraghty, Cassandra E.*
Secondary Education
*Can today’s students engage with a long, rhetorically challenging 19th century text: Teaching Pride and Prejudice*
Advisor: Lisa Schneier, Ph.D.

My distinction project focuses on student engagement with *Pride and Prejudice*, which I taught a unit on during my Student Teaching Practicum. There are three major sections of the project—design of the unit, design of lessons, and student development. I will trace my decisions regarding engagement before the unit began, daily lesson adjustments based on student interest, and finally I will trace student responses and how the unit itself was transformed based on the class. Student work will provide evidence of engagement, and I will reflect on the development process over the course of the unit as a whole, noting areas where I can improve its effectiveness in today’s classroom.

*Geraghty, Cassandra E.*
English Literature
*Epistolary Intimacy in Jane Austen’s Pride and Prejudice*
Advisor: David Palumbo, Ph.D.

My research explores Jane Austen’s use of letters in *Pride and Prejudice*. I argue that through negative examples of oral confessions and appropriate written epistles Austen illustrates improper and proper forms of communication. Ultimately through Darcy’s letter to Elizabeth, Austen teaches her readers how to communicate through the written word. Simultaneously she creates an alternatively intimate social world for herself and her readers free from the constraints of the heterosexual marriage plot.
Innostaa is a stop-motion illustrated short film demonstrating the way in which dreams create the foundation of the creative process. The overall objective for this surrealist narrative is to give viewers a perceptible experience of moments that are often ephemeral and intangible. Innostaa explores how dreams can act as mental canvases where ideas grow freely and rapidly. They drive creative thoughts and help artists develop and build ideas. Dreams are outlets for ideas and inspirations with endless possibilities and can provide us with innovative solutions to problems. The appearance of the butterfly throughout the piece characterizes transition, growth, spiritual and personal development and transcendence. These meanings delineate the creative process. The title, Innostaa, is the Finnish word for “inspire” and connects the heritage and dream aspects in the piece to the artist. Dreams help people combine ideas in new ways and we have much to learn from them.

Haynes, Nicole S.
Sociology
Race, Class, and Gender in Media Depictions of Police Misuse of Force: A Tale of Two Henrys
Advisors: Janese Free, Ph.D. and Katrin Križ, Ph.D.

This study explores how race, class, and gender are constructed and portrayed in media depictions of police misuse of force based on a case study analysis of two recent cases of police misuse of force: Henry Louis Gates Jr. in 2009 and DJ Henry in 2010. I analyzed a total of twenty articles and news segments and found that race, class, and gender are portrayed in different ways in the two cases; that the police perspective is given much more attention than the perspective of the victim and the victim’s family and their lawyers; and that language plays an important role in constructing an image of both men that de-validates their status as victims by focusing on an aggressive Black masculinity and drunkenness (in the case of DJ Henry). I discuss what these media depictions may entail for other Black male victims of police misuse of force.

Konecnik, Jenny A.
Sociology
Facing Hardships: How Migrant Teacher Advocates Experience the Challenges Their Students Bring to the Classroom
Advisors: Janese Free, Ph.D. and Rose De Luca, M.A.

This study examines migrant student hardships and the resulting challenges their teachers face in the classroom. The data are based on in-depth, semi-structured interviews with migrant educators employed by the Florida Public Schools System. Using social capital (Bourdieu, 1986) and middle class measuring rod (Cohen, 1955) as theoretical foundations, this study explores the relationships between the migrant student hardships and the challenges reported by the migrant educators. This research reveals migrant students face both educational and social hardships largely due to their unique lifestyle. The six leading migrant student hardships include: home life, income, constant migration, legal status, language barrier, and attitude. The migrant educators report the main challenges as lack of parental support, behavior problems, and administrative issues. The findings are discussed as they relate to prior literature and recommendations are made to improve migrant students’ education on both the local and national levels.

Kosoy, Eliza
Mathematics
An Investigation of a Random Walk: How Likely we are to Return to the Starting Point?
Advisor: Yulia Dementieva, Ph.D.

A random walk is a mathematical formalization of a path that consists of a succession of random steps. Many real life phenomena may be modeled by a random walk: a path traced by a particle traveling in the liquid or gas, an amount of money a gambler has after every game round, a walk of a lost person in a city wondering up and down the streets. In this
distinction project, we investigate a simple random walk in Euclidean space of 1st, 2nd and 3rd dimension, especially the probability of eventual return to the origin and the probability of reaching a certain boundary. We use various methods from probability theory including Markov chain random walk representation and computer simulations.

Krassnoff, David M.
Biology
*Investigating the Function and Localization of Der-GFP Fusion Proteins*
Advisor: Paul March, Ph.D.

Der is an essential GTPase in *E. coli*, but its function is not currently well understood. We compared the wild type (WT) protein to three different mutants, all of which inhibit one of the protein domains, leaving the other two domains active. The goal was to observe any differences in the localization of the protein that may lead to a better understanding on the protein's function. This was achieved by performing a transposition with Tn5 transposase, GFP, the wild type protein, and the three mutants (G1, G2, and D1D2). We screened for insertions at codon 188 because this region is a linker-region, it is stable, and because we wanted to have a pure population of in-frame GFP fusions. The WT has localization at the poles with some speckling throughout the cell. G1 has a strong, diffuse signal throughout the cell and fewer cells that have been elongated.

Lea, Alexandra J.
Education
*Reaching and Teaching Diverse Populations at the Lawrence School, Brookline*
Advisor: Sr. Karen Hokanson, SND, Ed.D.

My distinction presentation will focus on the highlights of my experience student teaching in the fall of 2013. I completed my student teaching practicum in a fourth grade inclusive classroom at the Lawrence School in Brookline, MA. After three years of undergraduate coursework and field placements in various schools, my student teaching experience went beyond my expectations and challenged me as a pre-service teacher. During my time at the Lawrence School, I worked with a variety of diverse learners in the classroom, and quickly realized the importance of reaching and teaching all students regardless of their linguistic backgrounds or ability levels. Through building a classroom community of inclusiveness while mindfully assessing and grouping students, I aimed to provide all students with equal and meaningful access to the curriculum in various ways.

Maiullari, Anthony F.
Education
*Critical Exploration in a Culturally Diverse Art Classroom Builds a Responsive Learning Community*
Advisor: Fiona McDonnell, Ed.D.

In a culturally rich and diverse school in the city of Boston, I introduced critical exploration pedagogy into my 7th grade art classroom. My 7th grade students explored subject matter that I presented to them (a set of Limbourg brothers' calendar paintings) and I, the teacher, explored what my students noticed about the material. This forum of active exploration created a classroom environment in which my students were encouraged and felt safe to share with each other their diverse reactions to ideas and insights about the materials. A classroom community developed in which our understanding and knowledge of both the subject matter and each other developed together. Critical exploration advanced social justice in the classroom by creating positive relationships among students from diverse backgrounds and helping them to realize their potential for sense-making.
Maritato, Shea B.
Global Studies and International Affairs
The Globalization of Ecofeminism: A Unified Resistance against the Degradation of Women and Nature
Advisor: Melanie Murphy, Ph.D.

Ecofeminism, a term coined by French writer Françoise d’Eaubonne in 1974, connects the exploitation and domination of women with that of the environment. For centuries both women and nature have been the product of suppression under patriarchy. In my research I argue that women of developing countries are the largest targets of this domination, as they rely heavily on their environments to provide food, shelter, and fodder to ensure their survival. My research outlines how the Ecofeminist movement began and its development over the last four decades. Specifically I focus on the Green Belt Movement in Kenya and the Chipko movement in India to outline how movements developed by female leaders in the late 20th century have served to counteract social and environmental degradation. Additionally I argue that Ecofeminism is a global movement unifying women from various parts of the world, in attempt to build a more environmentally sound world.

Mauer, Meaghan
Psychology
Examining musical timbre and emotion
Advisor: Xiaowei Zhao, Ph.D.

Observation of the universal attraction to and engagement in music has lead to a growing field of research in music cognition. In order to better understand human emotional processing of music, researchers investigate relationships between emotion and particular aspects of music. In the present study, I have investigated the influence of musical timbre on emotional arousal and perception. I hypothesized that timbre that is similar to the human voice would cause a stronger emotional response than timbre that is dissimilar to the human voice. In this experiment, participants listened to a piece of music played through cello, marimba, or piano timbre. Physiological responses were recorded while the music was playing, and participants completed an emotional word rating task and a self-report measure following the listening period. These measures were used to examine differences in emotional response between groups. Future directions in timbre research will be discussed.

Medeiros, Ruben
Mathematics
Spatial Structures and the Molecular Clock
Advisor: Benjamin Allen, Ph.D.

Neutral evolution refers to mutations that arise by random drift in a population. The main goal for this research project was to investigate how spatial structures affect the rate of mutation accumulation in a population. We looked into various possible spatial structure models that could slow down or speed up the rate of neutral evolution. We focused on a graph structure where there were two sub populations, upstream and downstream, and investigated the effects of the restrictive gene flow from upstream to downstream on the overall fixation probability. We showed that molecular clock is accelerated if and only if the death rate in the upstream population is larger.

Mizell, Alicia L.
History
The Role of Cape Verdeans in the New Bedford Whaling Industry: Late 18th-19th centuries
Advisor: Jeffrey Fortin, Ph.D.

This project analyzes the role of Cape Verdeans in the New Bedford whaling industry from the late 18th century throughout the 19th century. Seeking new opportunities in the newly developing nation of the United States, Cape Verdean men joined the crews of whaling vessels that had reached the islands from American whaling cities such as New Bedford. As they engaged in this very dangerous and difficult industry, these men quickly acquired the skills to become some of the
industry’s most efficient whale men. They would eventually rise to the ranks of ship captains and many were able to purchase their own packet ships in order to send their families and friends to the U.S. from Cape Verde.

Mwangi, Aydah W.
Biology
Investigating Novel Roles of Bfa1 in the Regulation of Mitotic Exit in S. cerevisiae
Advisor: Anupama Seshan, Ph.D.

The study of the cell cycle allows us to gain a better understanding of what goes wrong in human diseases such as cancer development and budding yeast, Saccharomyces cerevisiae, serves as a great model organism. Bfa1 is part of a two-component GTPase activating protein (GAP) in the mitotic exit network (MEN), and is crucial for regulating mitotic exit. When Bfa1 is overexpressed under the galactose-inducible promoter (pGAL), mitotic exit is blocked. Here, we conducted a genetic suppressor screen and identified Dbf2-H114Y as a dominant suppressor of the pGAL-BFA1 allele. We also investigated a new role for BFA1 in the regulation of mitotic exit. We confirmed that the Tem1 GTPase does not localize correctly to spindle pole bodies (SPBs) in GAL-BFA1 and that the Tem1-CNM67, GAL-BFA1 strain in which Tem1 is at SPBs exhibits impaired Cdc14 localization.

Nguyen, Jennifer T.
Psychology
Leadership and evaluating skill acquisition: A study on sex differences in college students
Advisor: Joyce Benenson, PhD

The study aimed to examine how young adult males and females who are leaders versus non-leaders evaluate the skills of a person who is a non-leader. 65 college participants from Emmanuel College learned a novel task and evaluated a same-sex student on his/her ability to learn the same task using a videotape of the student’s performance. Results showed that there were no sex or leadership effects on evaluations of the student’s performance, but females used more words than males to critique the performance of the student. Further, female leaders used more words to critique the student’s performance than male leaders did. However, female and male non-leaders did not differ in the number of words they used to critique the student’s performance. These findings suggest that female leaders are more detail oriented than male leaders.

Olsen, Danielle M.
Art History
Gendering Duchamp’s Fountain
Advisor: Cynthia Fowler, Ph.D.

Duchamp’s readymade Fountain (1917) is often referred to as the most influential work of modern art. In spite of this and the extensive amount of scholarship on the work, there has been little discussion of Fountain in relation to gender theory. This presentation provides an examination of Fountain through the lens of gender and argues that Fountain underscores modernist masculine exclusivity. The shape of Fountain as feminine in relation to its original function as a urinal, an easily recognizable male object, is a focus throughout the essay. Using the texts of Linda Nochlin, Rosalind Krauss and scholars writing more recently on Dada and gender, it’s argued that Duchamp’s Fountain does not operate differently than any other "great" work of art. The implications of Fountain as a gendered object explain its high status as a work of modern art in that it reinforces limited constructions of gender that define it.
O’Malley, Elizabeth K.
Communication & Media Studies

*Girls in the city: A post-feminist examination of HBO series a decade apart*
Advisor: Andrea McDonnell, Ph.D.

Over the past fifteen years, HBO has been on the cutting edge of entertainment, providing viewers with unique and groundbreaking programs. Two of these programs, the 2012 hit *Girls* and the syndicated turn of the millennium *Sex and the City*, have been hailed for their representation of post-feminist ideals. Post-feminism encompasses a variety of elements; those most strongly emphasized are a focus upon individualism, choice, and empowerment and the shift from objectification to subjectification. This essay explores how both *SATC* and *Girls* embody these values, yet also fail to recognize intersectional aspects of feminism. Although both series are set in New York City, a hub of diversity, they favor privilege in regards to race, economic status, and sexual orientation. Airing a decade apart, both Sex and the City and Girls display the ways in which televisual representations of post-feminism fail to recognize and empower a diverse range of female identities.

Parrelli, Allan P.
Biology

*Investigating the Putative GEF Domain Of Lte1 in the Mitotic Exit Network*
Advisor: Anupama Seshan, Ph.D.

The Mitotic Exit Network (MEN) is a GTPase signaling cascade that regulates the exit from mitosis in *Saccharomyces cerevisiae* and is controlled by spindle position and cyclin-CDKs. The GTPase Tem1 and the putative GEF Lte1 act at the top of the MEN. Lte1 may serve as a GEF for the Tem1 GTPase. However, biochemical GEF activity towards Tem1 has not been observed in previous studies. Here, we attempt to determine if conserved residues in the C-terminal GEF domain of Lte1 are important for its activity. Three point mutations were made in the C-terminal GEF domain: I1393E, K1395A and F1397E. These substitutions are hypothesized to disrupt a critical alpha-helix that is required for the canonical GEF hSos to function as a GEF. We found that these mutations do not affect the ability of Lte1 to promote mitotic exit, suggesting that Lte1 is not likely to be a GEF.

Pukma, Srunphut
Biology

*Assessing synergy of Crizotinib and Chlorpromazine in SHSY-5Y Neuroblastoma Cells*
Advisor: Rani George, Ph.D., Dana Farber Cancer Institute, Harvard Medical School

Neuroblastoma is a common childhood cancer that accounts for 15% of pediatric oncology deaths. Activating mutations in the Anaplastic Lymphoma receptor tyrosine kinase (ALK) represent an important therapeutic target in this aggressive disease. The ALK – F1174L mutation of human SH-SY5Y neuroblastoma cells confers resistance to the only FDA-approved ALK inhibitor, Crizotinib. The goal is to identify a novel compound that synergizes with Crizotinib in increasing neuroblastoma cytotoxicity using a high-throughput small molecule screen. The most recurrent classes of compounds includes monoamine neurotransmitter receptor molecules, such as 5-hydroxytryptamine and dopamine receptors. Primary screening and target validation confirms D2 dopamine receptor antagonist Chlorpromazine as a potential synergizer in human SH-SY5Y cells containing ALK – F1174L. Chlorpromazine demonstrated borderline synergistic bioactivity with Crizotinib cytotoxicity over single agent alone. This study supports pre-clinical in vitro and in vivo efforts in exploring the therapeutic potential for combination of Crizotinib and monoamine receptor inhibition in neuroblastoma.
Quigley, Kayla E.
Performing Arts & Gender Studies
Playing Gender: Analyzing Normative Gender Performance
Advisor: Scott Gagnon, M.A

The purpose of this research is to analyze how gender functions as performance. Emphasized through the use of playwriting, the work entitled Miss He provides a protagonist, which through scene analysis is examined through a theoretical lens. The research is heavily grounded in Lacanian and Freudian theories of psychoanalysis as well as a fundamental base of gender theory. The goal of the work is to present a character/subject which challenges normative gender behavior and perceptions by deconstructing cultural expectations of gendered behavior. Selected scenes from Miss/He will be performed and further examined to prove that the “natural” order of gender is in fact a faulty aspect of our inability to escape the three Orders of Lacanian theory.

Reilly, Diane J.
Political Science
The Double -Consciousness and Contemporary Black Political Thought
Advisor: Adam Silver, Ph.D.

In 1903, W.E.B. Dubois coined the term the double consciousness to explain an internal divide within the identity of an African American. This unique condition is a legacy of the institution of slavery and pervasive American racism. As a result, an African American must reconcile being both black and American. Acknowledging the barriers that result from the double consciousness can help to understand the factors that affect the political discourse that pertains to the communities of color. This study seeks to explore these possible effects through both qualitative and quantitative analyses of speeches made by contemporary African American politicians. Ultimately, this paper argues that Dubois’s understanding of ‘The Negro Problem,’ has sustained to affect American politics by hindering the reconciliation of the double consciousness, as well as influencing the way racial policy is presented and executed.

Rioux, Elizabeth N.
Political Science
To Run or Not To Run: Factors Affecting Whether or Not a Woman Decides to Run For Elected Office
Advisor: Adam Silver, Ph.D.

The health and future of a democracy is dependent upon the political participation of all its citizens, especially those who have traditionally been marginalized. Today, women make up just 18% of the U.S. Congress and 24% of state legislatures, but they represent a majority of the electorate. For decades, researchers have attempted to answer the question of why this dichotomy exists, exploring factors that range from voter bias and electoral system to political ambition and the prevalence of traditional gender roles. Through an analysis of the Candidate Emergence Study, which examined how potential candidates for the U.S. House of Representatives decide to run for Congress, I argue that decreased political ambition and recruitment contribute most to the underrepresentation of women in elected office. Additionally, a recreation of elements of the study will shed light on the current state of candidate emergence among Massachusetts’ female state legislators.

Rothstein, Brittany A.
Communication & Media Studies
Bearing witness: The effects of extreme misogyny in Stieg Larsson’s The Girl with the Dragon Tattoo
Advisor: Andrea McDonnell, Ph.D.

Since its publication in 2005, there has been debate within the popular press as to whether Steig Larsson’s best-selling The Girl with the Dragon Tattoo is a misogynistic text or a text that provides an opportunity to consider the effects of violence against women. Originally titled ‘Men Who Hate Women,’ The Girl with the Dragon Tattoo hyperbolizes misogyny and forces the audience to observe cruel acts against women. Yet, the text heralds the heroine Lisbeth Salander as a metaphor...
for fighting the patriarchal construct designed to oppress women. I argue that TGWTDT purposefully sensationalizes misogyny in order to compel the audience to bear witness to acts of misogyny that are less extreme and even considered mundane in everyday life. Using textual analysis and drawing from the work of Laurie Penny, this study shows how Larsson uses sensationalism to draw the reader’s attention to the prevalence of violence against women within our broader culture.

Sands, Alyssa H.
Psychology
The Effectiveness of an Art-Based Intervention on the Development of Language and Fine Motor Skills in an Early Intervention Context
Advisor: Linda Lin, Ph.D.

The purpose of this project was to investigate the effectiveness of a structured art intervention on children’s fine motor and language skills. I hypothesized that in the context of the early intervention toddler play groups, a structured art intervention which focuses on the child’s development of language and fine motor skills would lead to more improvement in those areas of development than the unstructured approach to art projects. I took pre-intervention and post-intervention measurements of fine motor and language skills in the control group and the intervention group. The analysis suggested that the structured art intervention had a positive effect on the children's fine motor and language skill development. Further research is needed, however, the results of this pilot study may help the Thom Early Intervention program develop more effective art-based intervention programs in the future.

Savino, Mary E.
Elementary Education
Reaching Diverse Learners at the Eliot school: The Rewards of Meeting Every Child's Needs
Advisor: Christine Leighton, Ed.D.

In Fall 2013, I completed my general education practicum at the Eliot K8 Innovation School in a third grade inclusion class. During my time at the Eliot School I had the opportunity to foster a classroom community among a diverse group of learners. I helped to create a culture which celebrated the uniqueness of all learners regardless of ability. I learned to collaborate with teachers and administrators to discuss our roles as teachers and as agents of change. As part of an innovation school I learned to differentiate instruction when developing curriculum and associated lesson plans to meet the needs of all learners. While implementing these lessons, each child had the opportunity to access the curriculum to achieve their personal best. This presentation will explore my growth as a teacher and my vision of becoming a future educator who can impact the lives of children.

Selkirk, William J.
Biology
Depletion of T regulatory cells by novel bivalent porcine IL-2 immunotoxin in miniature swine
Advisor: Christene Huang, Ph.D., Transplant Biological Research Center, Massachusetts General Hospital

T-regulatory cells (T-reg) are hypothesized as the main contributor in maintaining immunological unresponsiveness to self-antigens and in suppressing excessive immune response in the kidney induced cardiac allograft tolerance (KiCAT) transplantation model. In the pursuit to determine the mechanism by which KiCAT is established in miniature swine, we set out to deplete T-reg through the use of a novel bivalent porcine IL-2 immunotoxin. To accomplish this a previously long-term tolerant transplantation recipient was administered the IL-2 immunotoxin. Post administration the following cellular populations were monitored via FACS: T-reg, T-cells, B-cells and NK-cells. The in vivo results showed a high level of T-reg depletion as well as depletion of all additional cell lines evaluated. Despite T-reg depletion tolerance was never broken, possibly due to a lack of specificity. This study showed that T-reg could be depleted in vivo but modifications must be pursued to increase the specificity of the effects.
Epithelial ovarian cancer (EOC) accounts for about 90% of all ovarian malignancies. 3TSR, a domain of thrombospondin-1 has been proposed as a possible treatment for EOC, as it decreases tumor size and vasculature in-vivo. Through the use of in-vitro techniques, we aimed to (1) understand the mechanisms behind 3TSR’s functions and (2) determine the validity of its usefulness in a clinical setting. We found that 3TSR does not alter the activation of vascular endothelial growth factor receptor-2 (VEGFR2), but rather down-regulates its expression. Apoptosis through caspase-3 relied on the presence of CD36 in EOC cells. Looking at a panel of patient’s cells, this could be a viable treatment option for some, but the protein expression was not ubiquitous. This work helped us understand how 3TSR works to inhibit tumor growth and validated the fact that it can have clinical implications for certain patients with EOC.

Character education is not a new concept in the world of public education. However, there are new findings in the types of character education that are most productive and successful for the student’s future. Traditionally, character education focuses on moral values that lead to creating a morally sound student. By this definition, character education has been a focus in elementary schools and revolves around the teaching of moral words that lead students to character development. Through research analysis and my experience from teaching in Fenway High School, I will show how a general mathematics teacher could teach these performance characteristics to her students. Using data analysis, I will discover the effects this change in character education may have in the high school environment and how it will better prepare these students for their post-schooling career.

Since the global economic crisis of 2008, there has been a renewed interest in income inequality and its causes. This paper examines the institutional variable of interest group systems and asks: to what extent does type of interest group system (corporatist or pluralist) in democracies affect income inequality? Using Lijphart’s ratings on interest group systems in thirty-six democracies and GINI coefficients, the data presented in this paper shows that a significant correlation between the two exists. It suggests that the more corporatist a country’s interest group system is; the lower its income inequality will be. However, type of interest group system does not exclusively influence inequality, as the other variables of path dependency, party system, human development index, GDP per capita, and region were also influential. When looking for variables that affect inequality, institutional variables should also be considered because of their potential to affect policy formation and outcomes.
Trowell, Aaron J.
Biology
*Diphtheria Toxin-Based Recombinant Murine IL-2 Fusion Toxin for Depleting Murine T Regulatory Cells*
Advisor: Gilles Benichou, Ph.D., Transplant Biological Research Center, Massachusetts General Hospital and Harvard Medical School

This research was conducted to further our understanding of how the immune system interacts with an allo-graft to induce rejection or tolerance. The focus of this research has been with Regulatory T cells. $T_{\text{reg}}$ suppress the immune response to an allo-graft and other pathogen that would stimulate an immune response. By manipulating these cells we hope to induce tolerance, which is a state in which the immune system recognizes an allo-graft as self. In order to conduct more extensive research on $T_{\text{reg}}$, the development of an effective treatment for depleting these cells *in vivo* is needed. In this study a murine IL-2 conjugated diphtheria toxin was employed in an effort to deplete $T_{\text{reg}}$. After the toxin was administered, $T_{\text{reg}}$ and other immune cells were monitored over several days. We found that this toxin successfully targeted $T_{\text{reg}}$ and was able to significantly reduce the population in an *in vivo* murine model.

Vertullo, Amanda M.
History
*Irish Biddys, American Mistresses: the Ideological Underpinnings of the Servant Problem in the Nineteenth Century*
Northeast
Advisor: Jeffrey Fortin, Ph.D.

Women of the nineteenth-century often lamented the "servant problem", the inability to find good help. Not only were they uneducated papists, but Irish immigrant women were notoriously temperamental workers, and would frequently demand higher pay or walk out on their mistress, leaving her in the lurch. Boston's housewives were often at odds with their Irish help who was not the capricious, greedy character many American women painted her to be, neither was the servant problem and issue of finding adequate employees. The conflict between housekeeper and Biddy was ideological: Middle class women adhering to the cult of domesticity could not reconcile nor approve of the ambitions of their employees who sought financial independence.

Weiss, David A.
Biology
*In Vivo Gene Silencing of Up-Regulated Repair Mechanisms Responsible for Intimal Hyperplasia Resulting in Post Surgical Vein Graft Rejection*
Advisor: Leena Pradhan-Nabzdyk, Ph.D., Beth Israel Deaconess Medical Center

In the United States, over 330,000 bypass surgeries are performed each year, costing Americans an average of 44 billion dollars. Nearly 50% off all bypass surgeries will fail within the first 10 years. Intimal hyperplasia is the cause of 75% of this failure. Severe trauma as a result of surgery causes this natural repair mechanism to be highly up-regulated. Several target genes were identified for this in vivo study. It was postulated that inhibition of intimal hyperplasia at the target site could be achieved via siRNA coated grafts. This experiment also compared the effects of siRNA on prosthetic and natural vein grafts. Gene silencing of intimal hyperplasia by way of siRNA was then tested in vivo in a rat model. Vessels where then removed at specific time points for identification and comparison of treatment groups. Preliminary results appear to demonstrate potential improvement in TSP-2 gene silencing groups.