

Economic Issues

The Cost of Good Health

(short talks) Pendleton East 239

The Effect of Mandated Benefits for Alcohol and Substance Abuse Treatment on Infant Health Outcomes

Lisa Abraham '10, Economics and Mathematics

ADVISOR: *Courtney Coile, Economics*

Recent surveys indicate that alcohol abuse among women is rising, of which a particularly noxious form is drinking during pregnancy. Mandated benefits for alcohol and substance abuse treatment have the potential to counter this behavior, by requiring through state law that insurance companies provide more generous financial or medical coverage for these services. My analysis measures the effect of having alcohol and substance abuse mandated benefits within a state on a spectrum of infant health indicators, including Apgar scores, infant mortality, congenital defects, period of gestation, and birth weight.

Does Obstetric Intervention Improve Infant Health? An Economic Analysis

Runshan Deng '10, Economics

ADVISOR: *Kristin Butcher, Economics*

Pregnant women with access to modern standards of prenatal and perinatal care are subject to a variety of screenings and procedures that are designed to improve the health of both mother and infant. These “interventions” tend to increase with maternal age, as older mothers face greater health risks that may be prevented with appropriate use of obstetric intervention. However, since mothers aged 35 and older are deemed to have reached “advanced maternal age”, interventions are performed at a more aggressive rate, creating a jump, or discontinuity, of the rate of obstetric intervention at age 35 that may be due to non-medical reasons. This study takes advantage of such discontinuity in order to measure the effectiveness of various obstetric procedures in improving infant health. Examined procedures include the performance of cesarean section deliveries and induction of birth, the use of electric fetal monitoring, and the implementation of amniocentesis.

Does Accessible Health Care Make a Difference? The Effects of Health Insurance on Use of Preventative Care and on Health Outcomes among Diabetics

Ilana Orloff '10, Economics

ADVISOR: *Robin McKnight, Economics*

One significant source of the increased spending on health care in the United States is the escalating costliness and prevalence of diabetes. Diabetes is extremely expensive due to complications that can result and the need for medication and health checks throughout a lifetime. The costs related to diabetes are not confined to the afflicted individual, but extend to society as a whole through higher taxes, elevated insurance premiums, and reduced standards of living. Given the increasing prevalence and importance of diabetes, this paper focuses on the role of preventative care in the successful treatment of diabetes. This paper investigates whether health insurance affects diabetics' usage of preventative care and also measures the effects on health outcomes for diabetics. The analysis uses a regression discontinuity model and the discrete change in eligibility for Medicare once Americans turn 65 to measure these effects.

Does Health Insurance Affect Utilization of Health Services and Health Outcomes? Evidence from Cancer Patients with and without Medicare Eligibility

Susun Kim '10, Economics

ADVISOR: *Courtney Coile, Economics*

As the U.S. moves closer to adopting universal health insurance coverage, one critical question is how health insurance coverage affects the utilization of health care services and health outcomes. This effect is difficult to identify, since people with and without health insurance may differ in ways that affect these outcomes—for example, people who are sick may be more likely to buy insurance. New cancer diagnoses, which serve as a shock to an individual's health status, offer a potentially appealing way to identify the effect of insurance on utilization and outcomes. In this project, I use the National Cancer Institute's Surveillance Epidemiology and End Results database to explore whether health insurance

coverage affects cancer treatment and mortality. Controlling for the severity of cancer and other predictors of mortality, I compare patient outcomes by age and race, looking carefully at how these change at the Medicare eligibility age of 65.

Literature and the Arts

Hysteria, Spouting Fish, and Quackery (short talks)

Founders Hall 120

Hysteria: Victorian Violence Against Women

Megan Wilson '13

ADVISOR: *Charlene Galarneau, Women's and Gender Studies*

In the Victorian Era, “hysteria” was a common diagnosis that often confined women to bed for weeks on end. The theorized root of the disease was the inherent frailty of women: too much strenuous activity was thought to cause a host of ailments, from anxiety and sleeplessness to delirium, to vaginal lubrication and other signs of sexual arousal. The diagnosis pathologized sexual desire in women, and treatment often included isolation or sexual violation. Even the threat of diagnosis was enough to enforce the Victorian ideal of female passivity by defining inappropriate behavior. The concept of hysteria was so fraught with gender stereotypes that it crossed the line from a true medical condition to a tool doctors used to forcibly control women's bodies. By placing severe limitations on women as a sex, the hysteria diagnosis reinforced Victorian social norms and helped to keep women intellectually, sexually, and socially subordinate to men.

Spouting Fish with Horizontal Tails: Melville, Cetology, and Scientific Writing

Amy Allport '10, English

ADVISOR: *Lawrence A. Rosenwald, English*

Is a whale a fish? Biblical references, economic interests, and common sense in the early nineteenth century thought so, and scientific authorities were powerless to sway popular opinion. The barrier between the scientific community and lay audience

has been in place since people first tried to share observations with those around them. A journal article written for an audience of experts is meaningless and impenetrable to the average reader even if they find interest in the subject, so science writers must present scientific information in a familiar, almost narrative style. Successful writers must be able to evaluate the popular attitude regarding academic authority to avoid alienating audience members while maintaining scientific integrity. When Melville published *Moby Dick* in 1851, he was certainly familiar with contemporary science writing; to what extent is his almost encyclopedic account of whales and the business of whaling science writing? (Research supported by the Office of the Dean of the College.)

The Golden Age of Satire: Thomas Rowlandson's Prints and Medical Reform, 1780–1830

Ilene Tsui '10, Neuroscience and Art History
ADVISOR: *Meredith Martin, Art*

Popular prints, a valuable source of visual documentation, circulated throughout Georgian London and carried influential, moralizing messages. During the Golden Age of Satire, health and disease were among the most prominent subjects illustrated in prints. My thesis explores the dynamic relationship between satirical prints and the evolving medical world of Georgian London by focusing on the work of Thomas Rowlandson, one of the great English caricaturists of the era. To what extent did satirical prints not simply reflect but actually reform the medical marketplace? What role did popular art play in re-shaping the doctor-patient relationship, the practice of medicine and hygiene, and the rise of hospitals and other medical institutions? By examining these issues through Rowlandson's satirical lens, I hope to reveal the connections between Georgian art, society, and medicine. (Research supported by the Office of the Dean of the College.)

Tableaux Vivants: Inhabiting Music through Movement and Connecting Sounds, Space, and Vision (interactive teaching presentation) Pendleton West 220

Anne Goldberg '10, Music and Spanish
ADVISORS: *Martin Brody, Music, and Peter Child (MIT)*

In some Eastern cultures, dance and music are expressed by the same word because they are treated as actions done together, one influencing the other. This composition thesis is an exploration of the unique relationship between music and movement, specifically relating towards creation. Where does the impetus come from? Which comes first—music or dance? How does the style of one discipline affect the other? As a result, the contemporary ballet, *Tableaux Vivants*, paints “living pictures” of an abstract storyline that integrates both movement and music in both the dancers and musicians. The phenomena of music and dance are still a beautiful mystery that will never quite be explained, yet this work is one commentary and exploration into the infinite realm of connection and interaction between the two fields.

Connecting Sounds, Space, and Vision: The (Non-)Musical Uses of Analog Recording Technology

Michelle Wong '10, Music
ADVISOR: *Martin Brody, Music*

The advent of analog recording technology transformed the field of musical composition. Sounds that previously could not be recorded or notated—whether everyday life sounds or human speech—could hence be used as raw materials for musical and artistic practices. Replayable, sliceable tape recordings also promised new ways of organizing sound that connected the aural medium with space and vision. Edvard Varese's *Poeme Electronique* in Le Corbusier's *Philips Pavilion* in the 1958 Brussels World Exposition, and Steve Reich's tape music from 1965–1968 and Sol Lewitt's early Wall Drawings in 1960s are creative works that exemplify such new relationships between sound, space, and vision. With reference to these two sets of case studies, this thesis project examines how tape recording technology altered our experience of and relationship with sound and the world.

Science and Technology

Language without Sounds (short talks) Pendleton East 139

Emergence of Referential Shift in a New Sign Language

Annemarie Kocab '10, Cognitive and Linguistic Science
ADVISOR: *Jennie E. Pyers, Psychology*

Referential shift is a grammatical device used to mark multiple perspectives in a narrative. Across different sign languages, signers shift their torso to one side or the other to express referential shift. Although the body shift ironically depicts a character shift, it depends on the signer consistently placing characters in the same space across a narrative. We examined whether signers of an emerging sign language in Nicaragua use the body shift as a referential shift device. In the Nicaraguan deaf community, the younger signers introduce grammatical features that the older signers are unable to acquire. Deaf Nicaraguans' descriptions of six videos were coded for consistency in marking spatial relations and for the use of the body shift. Younger signers used the body shift and consistently marked spatial relations more often than older signers. Thus, the use of the body shift only emerges when signers consistently locate characters in space. (Research supported by the Office of the Dean of the College and the Radcliffe Institute for Advanced Studies.)

The Relationship between Working Memory and Gesture in Word Retrieval

Masa Dikanovic '10, Cognitive and Linguistic Sciences, Sam Grossmith '11, Cognitive and Linguistic Sciences, and Rachel Magid '12, Psychology
ADVISOR: *Jennie E. Pyers, Psychology*

People often gesture while talking. But does gesture make talking easier? Previously, we demonstrated that some individuals show enhanced word retrieval while gesturing. The current within-subjects study examined the interaction between working memory and gesture in word retrieval. Thirty-eight monolinguals completed two working memory tasks and named two sets of pictures. For one set, participants were allowed to gesture

(GA); for the other their gestures were inhibited (GI). There were no differences between the GA and GI conditions in the number of successfully retrieved words. But the ability to successfully resolve a tip-of-the-tongue state (ToT) while in the GI condition positively correlated with auditory working memory, but not spatial working memory; individuals with poorer auditory working memory relied on gestures to help them resolve their ToTs. These results indicate that gesture plays a role in language production, but only for those whose auditory working span cannot support rapid word retrieval. (Research supported by a Howard Hughes Medical Institute Research Grant, the Office of the Dean of the College, and the Radcliffe Institute for Advanced Studies.)

Talking about Spatial Relations in a Sign Language

Jenny Lu '10, Cognitive Neuroscience
ADVISOR: *Jennie E. Pyers, Psychology*

The current study examines how signers of American Sign Language (ASL) prefer to describe spatial relations. ASL can convey spatial relations in two ways. First, ASL has spatial prepositions like ON and UNDER. Alternatively, signers can use *classifier constructions* to iconically describe spatial relations. To sign, “the cup is on the table,” the signer places one hand representing the cup on the other hand representing the table. To depict “the cup is under the table” the signer moves the “cup” hand under the “table hand.” Thirty-one native signers’ descriptions of 77 short videos depicting spatial relations were coded for whether prepositions, classifier constructions, or both were used. ASL signers overwhelmingly preferred to use classifier constructions (93%) over prepositions (.02%). Sometimes they used a combination of both (6%). The preference for classifiers likely stems from the fact that they simultaneously express object and spatial information, while prepositions only express the latter. (Research supported by the Office of the Dean of the College and the Radcliffe Institute for Advanced Study.)

Molecular Biology Studies (short talks) Pendleton West 117

Designing an Inducible APOBEC3G Cell Line to Combat HIV

Jenny Chang '11, Biochemistry
ADVISOR: *Donald Elmore, Chemistry*

Since its discovery in 1981, AIDS has killed more than 25 million people. In 2005 alone, there were 4.1 million new HIV-1 infections and 2.8 million AIDS deaths. Currently, antiretroviral treatment is the best option for long-lasting viral suppression and reduction of morbidity and mortality. Our current research focuses on APOBEC3G, a human protein, that is an attractive lead for treatment. APOBEC3G interferes with HIV replication by inducing many deoxycytidine to deoxyuridine mutations on HIV DNA as the virus replicates via reverse transcription. Unfortunately, lentiviruses, such as HIV, have evolved the Viral infectivity factor (Vif) protein in order to counteract this effect by triggering ubiquitination and degradation of APOBEC3G via the proteasomal pathway. In order to study the APOBEC3G/Vif relationship, a Tetracycline-responsive system and Ecdysone-inducible promoter system was designed. This cell line would help determine the effect of different APOBEC3 cytidine deaminase expression levels on HIV and its diversification.

Understanding Hormone Actions in the Brain: Interactions between Mouse Progesterone Receptor Subtypes and Steroid Receptor Coactivators

DaEun (Dana) Im '10, Neuroscience, and Jennifer Wan '12, Biological Chemistry
ADVISOR: *Marc Tetel, Neuroscience*

The ovarian steroid hormone, progesterone, acts in the brain to profoundly influence a variety of physiological processes and behaviors, including development, reproduction, and cognition. Progesterone elicits many of these biological effects by binding to progesterone receptors (PR), which are a member of a superfamily of nuclear transcriptional activators. PR are expressed in two forms, full length PR-B and truncated PR-A, that are transcribed from the same gene. With the recent advancement in powerful genetic approaches to manipulate and examine the mouse genome and proteome, the mouse model provides a sophisticated experimental

model for studying mechanisms of progesterone action in brain. In this study, a mouse-on-mouse pull-down assay was developed to examine the physical interactions between GST-tagged mouse PR subtypes and coactivators from mouse brain. By taking a proteomic-based approach, we hope to identify other coactivators and potentially novel proteins that physically interact with PR subtypes to mediate progesterone action in the brain.

Characterizing Chloroplast Movement in Various Plant Species

Nicole Bollinger '10, Biological Sciences, Sun-Mee Paik '10, Biochemistry, and Galina Ionkin '11, Biological Sciences
ADVISOR: *Martina Königer, Biological Sciences*

Under low light chloroplasts spread out within a cell in order to maximize light interception (accumulation response); at high light they move to the edges of the cells minimizing light interception (avoidance response). A comparison of 10 widely different plant species showed that while all plants showed accumulation and avoidance responses, the kinetics and the magnitudes of chloroplast movement were significantly different. Weedy species exhibited fast chloroplast movement, while shade adapted plants were slow movers. We are examining morphological characteristics and genetic difference in the sequences of proteins that are involved in chloroplast movement in hopes of explaining the reasons for these differences in behavior. We are also determining the relative importance of chloroplast movement to high light stress tolerance amongst this range of species. (Research supported by the Georgeanne Miller Mulhern Summer Research Fund for Student/Faculty Research in the Sciences.)

Bugging Out (short talks) Science Center 104

Nutrient Dependent Regulation of the Timing of the Molt in *Manduca sexta* Larvae

Karen Kemirembe '12, Biological Sciences and Spanish
ADVISOR: *Yuichiro Suzuki, Biological Sciences*

Molting, or the shedding of the epidermis, is crucial to insect growth and development. Although the mechanism underlying the

secretion of the molting hormone, ecdysone, is known, the factors regulating its expression and the timing of the molt remain poorly understood. To examine whether certain nutrients obtained from diets are responsible for the initiation of the molt, fourth instar *Manduca sexta* larvae were fed diets of varied nutrient concentrations and composition until they molted. Results showed a direct correlation between the amount of protein intake and the duration of molting. Sucrose, however, failed to induce a molt. Amino acids, coupled with TOR signaling therefore may play a key role in regulating the molting process. Investigations on the link between amino acids and the endocrine regulation of molting are underway. (Research supported by the Sherman Fairchild Foundation, Mentoring in Science Program (MSP), and Brachman Hoffman Fund.)

The Role of Temperature and Hox Genes on the Regulation of Abdominal Pigmentation in *Oncopeltus fasciatus*

Aabha Sharma '12, Biological Chemistry
 ADVISOR: *Yuichiro Suzuki, Biological Sciences*

Complex traits, such as body pigmentation, often exhibit phenotypic plasticity, the ability of a genotype to produce contrasting phenotypes in different environments. Yet the mechanism underlying phenotypic plasticity is not well understood. To begin to investigate the regulation of phenotypic plasticity in abdominal pigmentation of the milkweed bug, *Oncopeltus fasciatus*, the roles of Hox genes were investigated. The knockdown of *Abd-B* Hox gene expression through RNA interference (RNAi) resulted in increased abdominal pigmentation, indicating that *Abd-B* likely plays a repressive role in the temperature sensitive regulation of abdominal coloration. Furthermore, bugs injected with *Abd-A* double-stranded RNA developed into adults that completely lacked abdominal pigmentation, indicating that *Abd-A* most likely plays an important role in the generation of the black pattern. Analyses of genetic interactions between these two Hox genes and the temperature sensitivity of Hox gene expression are currently underway. (Funded by Howard Hughes Medical Institute Grant, Mentoring in Science Program (MSP), and Brachman Hoffman Fund.)

Function of BTB-zinc Finger Protein Abrupt during Larval and Pupal Development of the Beetle, *Tribolium castaneum*

Christie Sze '10, Biological Sciences and Economics
 ADVISOR: *Yuichiro Suzuki, Biological Sciences*

Normal organismal development requires the correct timing of developmental events, and coordination of these events is a result of programmed changes in gene expression. One gene implicated in the temporal organization of development encodes for the transcriptional regulator Abruapt. Much of what is known about its role comes from *Drosophila* studies: repression of Abruapt in fly abdominal muscles during pupal development prevents progression to the adult stage, and Abruapt may temporally regulate border cell motility through ecdysone signaling in fly ovaries. To examine the evolutionary conservation of the function of this gene, the effect of removal of Abruapt was examined in the beetle *Tribolium castaneum* using RNA interference (RNAi). Abruapt RNAi resulted in phenotypes that included precocious eye development, reduction in pupal wings, and fusion of adjacent segments of the antennae. Further investigation on the expression of Abruapt in *Tribolium* development and its potential interactors are underway. (Research supported by the Office of the Dean of the College.)

Fibroblast Growth Factor Maintains the Integrity of the Epidermis in *Tribolium* Larvae and Pupae

Emilie Mitten '10, Biological Sciences
 ADVISOR: *Yuichiro Suzuki, Biological Sciences*

In both invertebrates and vertebrates, fibroblast growth factors (FGFs) regulate fundamental cellular activities, including proliferation, cell adhesion, migration, differentiation, and apoptosis. However, the roles of FGFs in the postembryonic development of insects remains to be characterized. To elucidate the developmental roles of *Fgfs* and the fibroblast growth factor receptor (*Fgfr*) in larvae of the beetle *Tribolium castaneum*, RNA interference (RNAi) was used to deplete the four *Fgf* genes (*Fgf1a*, *Fgf1b*, *Fgf8*, and *Bnl*) and *Fgfr* gene products in the last larval stage. The knockdowns of *Bnl* and *Fgfr* both produced defects in cuticle sclerotization and texture in

the larval and pupal stages. The knockdown of *Fgf8* resulted in disrupted gut tracheation in the adult stage. In contrast, the *Fgf1a* and *Fgf1b* knockdowns did not produce any morphological changes. Experiments to determine the effects of *Fgfr* and *Bnl* knockdowns on epidermal cell proliferation, tracheal development, and leg regeneration are underway. (Research supported by the Office of the Dean of the College.)

Players in the Lipid Layers: Studies of Membrane Proteins (panel) Science Center 396

Amanda Daigle '12, Computer Science, CarolAnn Ferris '10, Biological Chemistry, Ryann Guayasamin '10, Biological Chemistry, Jessica Hawkins '10, Biological Chemistry, Yoon-Young Heo '11, Chemistry, Kathryn Pavia '12, Biological Chemistry, Sara Spinella '11, Biological Chemistry and Spanish, and Yang Xie '10, Biological Chemistry
 ADVISOR: *Donald Elmore, Chemistry*

The Elmore Lab studies a variety of membrane proteins that mediate important cellular processes. Buforin II is a histone-derived antimicrobial peptide. To better understand buforin II, the antimicrobial activity, translocation, membrane permeabilization and DNA binding of several mutants were measured. In addition, three novel peptides based on histone fragments were characterized. A novel family of bacterial cyclic nucleotide gated (bcNG) ion channels was recently identified and computer homology models of these channels were created. Experimental crosslinking and downshock studies have been used to confirm the models and to determine if bcNG channels should be considered part of a larger channel superfamily. Patellin1 (PATL1), a protein recently described by the Peterman lab, binds phosphoinositides with a strong preference for PtdIns5P. A series of modeling and spectroscopic studies in the group are investigating phosphoinositide binding of the PATL1 SEC14 domain.

Enhancing the Museum Experience through Advanced User Interfaces (panel) Pendleton West 212

Lia Napolitano '10, Media Arts and Sciences, MaCherie Edwards '11, Media Arts and Sciences, and Megan Strait '10, Computer Science

ADVISOR: *Orit Shaer, Computer Science*

The Davis Museum is a hub of artistic and cultural opportunity on the Wellesley campus, granting community members firsthand access to world-class art. However, members of the staff and the student body have noticed a trend: when not required or rewarded with food, student museum attendance is surprisingly low.

Over the course of last semester's *CS349: Tangible User Interfaces*, we investigated how the use of advanced multi-touch user interface technology might enhance the Davis Museum visiting experience and attract more visitors. While surveying the use of cutting-edge technology by other museums, we developed three complementary prototypes for the Davis Museum: an iPhone application, and two applications on top of the Microsoft Surface, a coffee table sized multi-touch display.

We believe that these applications hold a potential to increase personal and social engagement within the museum. Currently, we are further developing these prototypes and hope to evaluate them in the Davis Museum later in the semester.

How Chemists Study Diabetes (panel) Pendleton East 339

Madeleine Kieffer '10, Chemistry, Zoe Samer '10, Chemistry, Tehsina Devji '11, Chemistry

ADVISOR: *David R. Haines, Chemistry*

Diabetes, a disease affecting over 24 million Americans and accruing an annual cost of 174 billion dollars in 2007, remains one of the most widespread diseases in the United States. Current treatments attempt to stimulate pancreatic insulin production, yet external insulin injections often become necessary. The Haines lab studies the insulin induction pathway through the incretin hormone, GLP-1. One project focuses on how the structure of GLP-1 binds to and

activates its receptor (GLP-1R). We are also exploring the structure of GLP-1R through a small molecule antagonist. Ultimately, the results from each of these projects will be used for future medical applications. (Research supported the Howard Hughes Medical Institute and the Staley Fund for Cancer-related Research.)

NO, Blood to Brain! (panel) Pendleton West 116

Neishay Ayub '10, Neuroscience, Zebra Omer '10, Neuroscience and Middle Eastern Studies, Lindsey Migliore '11, Neuroscience, and Rachel Kery '12, Neuroscience

ADVISOR: *Barbara S. Beltz, Neuroscience*

This panel presentation will discuss student work addressing major topics in neurogenesis research. Adult neurogenesis is the lifelong birth and proliferation of neurons in adult brains. Our lab uses a crustacean model to investigate the mechanisms that underlie this process. We will present external factors that may influence neurogenesis, and their clinical implications. One of these factors is lithium, a popular treatment for bipolar disorder and treatment-resistant depression. Another factor we studied is how environmental enrichment may influence numbers of precursor cells in the brain. Lastly, we will be addressing the connection between blood and brain. In particular, we will focus on whether cells originating in the hematopoietic tissue, circulating in the blood, transform into neural precursors.

Social Analysis

Together: Communities in Action (short talks) Science Center 278

Geek/Chic: Intergenerational Dynamics in the Science Fiction Fan Community

Molly Dunn '10, Anthropology and Japanese Language and Literature

ADVISOR: *Caitrin Lynch, Anthropology (Olin)*

Participation in science-fiction fan culture is more socially acceptable today than ever before. With the widespread popularity of new science fiction, fantasy, supernatural and comic book-inspired blockbusters, and the

popularity of “geek chic”, the face of fandom is changing. What was once counter-cultural, even deviant, is now trendy. While many still see fandom as a lifestyle, with its own traditions and world-view, the fan community is expanding to include an increasing number of casual participants. Nowhere is this change more visibly apparent than at fan conventions. Traditionally a place to meet up with like-minded individuals and celebrate common interests, conventions like Arisia in Cambridge incorporate an ever-increasing variety of fan expression—from classic literature buffs and filkers to steampunks and otaku. Does this shift create a rift between older and younger fans? Or does it add diversity to a once-stagnant subculture?

Do Students Find Community within Their Major?

Dorthea Damaskos '12, Sociology and Spanish

ADVISOR: *Lee Cuba, Sociology*

Many students believe that declaring their major field of study is one of the most important decisions they will make while in college. My presentation will use data collected for the New England Consortium on Assessment and Student Learning (NECASL) to explore why students hold a variety of attitudes about the sense of community within their major. Students who experienced a sense of community in their major and believed that they were a part of that community were affected differently by the size of majors, double-majors/minors, interdepartmental majors and efforts by major departments to foster community than those who felt that there was not a sense of community in their major. (Research supported by a Sophomore Early Research grant from the Office of the Dean of the College.)

“Slouching Towards Bethel”: Woodstock and the American Counterculture

Jeanine Navarrete '10, American Studies

ADVISOR: *Michael Jeffries, American Studies*

The last several years has seen a renewed interest in popular commemoration of the 1969 Woodstock Music and Arts Festival. Despite this avalanche of coffee table books and special edition posters, little academic scrutiny has been given to the relationship between Woodstock and the late 60s

American counterculture at the time of the festival. Through the analysis of oral histories, memoirs, musical performances, documentary footage and underground press coverage, this study will illustrate how Woodstock functioned as an important symbolic and physical space for participatory exploration and reinforcement of pre-industrial ideals within the counterculture. This study will also explore how manifestations of the tension between the politically militant and bohemian factions of the counterculture, and the tumultuous relationship between rock music and social activism were also inextricable components of Woodstock's contribution to 60s cultural radicalism. (Research supported by the Mellon Mays Undergraduate Fellowship.)

Community Organizing in Boston: Engaging Parents to Improve the Quality of Education

Jessica J. Lee '10, *Political Science*
ADVISOR: Wilbur Rich, *Political Science*

Community-based organizations often collaborate with schools and parents to improve the public education system in their communities. Parent involvement provides community organizers with the basis for effective collective action for change. However, engaging marginalized parents to advocate for their children's education is very difficult. A case study of the Boston Parent's Organizing Network (BPON) looks at both the successes and challenges in community organizing around education issues in Boston. For the past ten years, BPON has been working with parents to improve the quality of education in the Boston Public Schools. Through an ethnographic methodology, interviews, and history of education in Boston and BPON, the study will look at what factors influence the success of community organizing around education in Boston. (Research supported by the Barnette Miller Fund.)

Cross-cultural Research

Picturing the Other (short talks) Pendleton West 117

You're a Korean from Where???

Jessica Yoo '10, *Russian Area Studies and Anthropology*
ADVISOR: Philip Kohl, *Anthropology*

Did you know that Koreans have been migrating to Russia since the 1860s? They mostly settled in the Russian Far East and by the early 1900s, there were more than 300,000 Koreans in the region. However, in 1937, Stalin forcefully removed approximately 180,000 Koreans from the Russian Far East to Central Asia. These deported Koreans are known as Koryo Saram and the majority of Koryo Saram have been living in Central Asia for the past 70 years. However, since the disintegration of the Soviet Union, the Koryo Saram in Central Asia are facing language, religious, and ethnic discrimination as they try to adapt in the newly formed republics of Kazakhstan and Uzbekistan. This presentation examines the lives and identities of Koryo Saram and the rise of the Korean Movement since the disintegration.

Benevolent Racism: An Analysis of the Construction of Race in *Uncle Tom's Cabin*

Erica Richardson '10, *English and Classical Civilization*
ADVISOR: Elisabeth Ford, *English*

Harriet Beecher Stowe's anti-slavery novel *Uncle Tom's Cabin* is often cited as one of American literature's most successful social justice works. It is also agreed among literary critics to be one of the most racist works of American fiction. In the novel Stowe pronounces evils of slavery while providing stereotypical depictions of black characters. Stowe's sentimental writing style results in her attributing a great deal of sentimental integrity to the African race. This is countered by her belief in racial essentialism. The end result? An anti-slavery novel that is benevolently racist, esteeming the African race while carefully assuring the superiority of white America. These factors, as well as others, are responsible for making *Uncle Tom's Cabin* a novel that galvanized a nation and caricatured a people, which is perhaps why it is one of

the most telling and meaningful works of American literature today.

Negotiating a New National Identity for the Modern Era: Images of Women in Japanese Postcards, 1900–1930

Lillian Wies '10, *Art History*
ADVISOR: Heping Liu, *Art*

At the turn of the twentieth century, Japan was undergoing a process of rapid modernization and Westernization. Consequently, Japanese society was fraught with tension—tension between East and West, tradition and modernity, the government and the individual, and public and private personas. Postcard images of women were part and parcel of the tensions that occurred as Japan sought out a new modern identity. Women, as the symbolic face of the nation, were at the center of the debates about the direction of Japanese society. The diversity of these postcard images is indicative not only of the renegotiation of Japanese society at this time, but also of the active role postcards played in helping transcend previous social boundaries by offering women new identity options.

Two Worlds, One Subaltern: Oppression of the Subaltern in Spanish Medieval and Colonial Literature

Zabra Mohamed '10, *Spanish*
ADVISOR: Elena Gascón-Vera, *Spanish*

Subaltern groups have often been written about and spoken for, but what is it that has historically qualified them to be classified as such? Women in medieval Spanish literature are often portrayed as having no voice of their own or as using their cunning to gain agency. Indigenous tribes of the “New World” were depicted in Spanish colonial literature as those who need to be saved by Spanish culture, language, and religion. These two groups occupy two different sections of history and humanity, but they share membership in the world of the subaltern and a struggle to (re)gain their voices. Writers of this literature had various motives and messages, but all contributed to a legacy that still remains today. What about this literature is problematic for the aforementioned groups? What challenges do they face by being part of a history and discourse that they had little to no hand in writing?

Economic Issues

Global Crises, Global Solutions (panel) Pendleton West 212

Economists from around the world formed the Copenhagen Consensus in 2004 to set priorities in addressing global challenges and compete for a hypothetical \$50 billion to fund policies to address these challenges. In ECON 312 we simulated the Copenhagen Consensus by forming groups to examine the challenges and the proposals to address them. The aim of each group was to persuade our fellow classmates that our global proposal would make the greatest impact on the world's population.

Global Crises, Global Solutions: Climate Change

Hannah Dornbusch '10, Economics, and Hilary Gram '10, Economics
ADVISOR: Joseph P. Joyce, Economics

Climate change is a major global issue that will greatly affect the world's population in the coming decades. As temperatures rise in regions around the world, millions of people will face increased food and water insecurity. The world's economy will also suffer trillions of dollars in damage. In their paper to the Copenhagen Consensus challenge, Gary Yohe et al. articulate the challenges presented by climate change and the various policies that could potentially limit carbon emissions and temperature increases over the next century. In our presentation, we will discuss their findings regarding the impacts of climate change on the food supply, the geographic make-up of each continent, and various species, over the next several centuries. While climate change cannot be prevented, we will present potential solutions to deal with its effects today and into the future.

Educational Outcomes: How Can Education Reduce Income Inequality in a Period of Accelerating Globalization?

K. Soob Cho '10, Economics, Darshini Patel '10, Economics, and Soumya Srinagesh '10, Economics and Mathematics
ADVISOR: Joseph P. Joyce, Economics

Globalization has brought new technologies to developing economies, placing a premium on higher skills. As a result, developing

nations must extend education, especially primary education, to their entire populations in order to fully capitalize on opportunities brought to their countries through increased international trade and financial integration. This presentation will discuss education as a public good and analyze the role of the public sector in providing education. Economists agree that education improves social welfare universally through increased positive returns to wage earners; still, some wonder whether the externalities from schooling truly justify full government subsidies. In addition to exploring supply-side interventions, like the construction of new schools, and demand-side interventions, like voucher programs, the presentation will consider the cost-effectiveness of these initiatives, especially in developing nations, and question the validity of education as a global public good.

Environmental Issues

Environmental Policy: A Global Perspective (panel) Science Center 104

In order to understand how to make environmental policy, we need to understand how and why various actors behave when faced with environmental issues. This panel considers four separate research papers that ask about the determinants of environmental behavior. What gives disadvantaged states bargaining power in international negotiations or leads developing states to comply with international environmental agreements? Under what conditions do states form precautionary or permissive rules to protect against new technologies and how do communities respond to efforts to create these new technologies from their resources? These papers all evaluate the role of socioeconomic and political factors in determining environmental outcomes.

Non-compliance with International Environmental Agreements

Kylie Cohn DS '10, Political Science
ADVISOR: Beth DeSombre, Environmental Studies/Political Science

International environmental agreements continue to grow in importance and number. When do states make an effort to follow international agreements? When a state is found in violation of international expectations are there ways to predict whether the state is likely to return to compliance? Are there actions the international community can take which make a return to compliance faster or more likely? Knowing which states will make the effort to return to conformity with international rules can help create stronger environmental regulations on the international level. I examine 22 countries that spent time out of compliance with the Montreal Protocol in an effort to determine what traits are held in common by states that become non-compliant and then successfully return to compliance.

Community Response to Bioprospecting (or Biopiracy?) in Central and South America

Lauren Fink '10, Environmental Studies
ADVISOR: Beth DeSombre, Environmental Studies/Political Science

Indigenous healers know the medicinal properties of many unique plants and biological substances. Their knowledge provides a powerful and controversial tool for industry or academic researchers. When these “bioprospectors” come in, some communities respond with violent opposition, while others welcome the project and participate actively. This study examines the conditions that influence these responses, using contemporary case studies from Central and South America. Factors examined include economy type, colonial language use, domestic regulation, and non-governmental organization involvement. Communities with a greater level of participation in the capitalist economy were more likely to comply with or even embrace bioprospectors, while communities with higher levels of proficiency in the colonial language were more likely to actively resist a project. For activists who wish to prevent the exploitation of indigenous communities by “biopirates,” these data suggest that increased

economic independence and education in the colonial language could help communities protect themselves.

Disadvantaged State Outcomes in International Environmental Negotiations

Jennifer Hatch '10, Peace and Justice Studies
ADVISOR: *Beth DeSombre, Environmental Studies/Political Science*

Disadvantaged states are predisposed to poor outcomes in international environmental negotiations, but sometimes achieve unexpected success. What are the factors that lead disadvantaged states to achieve good outcomes in environmental negotiations? Examining ten international environmental negotiations over the past forty years, I perform an analysis of factors that may affect outcomes for disadvantaged states. The results indicate that common-pool-resource-likeness, congruity, symmetry, and negotiator involvement all positively affect outcomes for disadvantaged states.

GMOs or no GMOs?: What Determines a Country's Regulatory Policy Response to New Technologies

Caitlin McGlynn '11, Environmental Studies
ADVISOR: *Beth DeSombre, Environmental Studies/Political Science*

Biotechnology has been controversially labeled by many as the future savior of agriculture in our environmentally-degraded world. Why have some states chosen to embrace this new technology while others regulate or ban its usage? The regulation of GMOs brings together a perfect storm of pro and cons for countries facing food and economic crises. Faced with uncertainty about the risks and benefits of biotechnology, some states develop their own GMO programs and others mandate stringent labeling policies or complete moratoriums. This study examines what influences these states' GMO regulatory and labeling policy decisions by looking into factors such as wealth, level of public activism, government accessibility, and food security. I examine these factors in the current policies of fifteen countries from every continent and economic background in order to provide a broader framework for evaluating how states deal with new technologies and their uncertain risks.

Designing an Edible Ecosystem Garden at Wellesley (panel) Science Center 396

Laura Chilson '11, Anthropology, CarolAnn Ferris '10, Biological Chemistry, Carly Gayle '13, Alexandra French '11, Classical Civilization, Melanie Kazenel '10, Environmental Studies and Spanish, Hoi-Fei Mok '10, Biological Chemistry, Hannah Rainey '10, Cinema and Media Studies, Bracha Schindler '11, Environmental Studies, and Carolyn Whitlock '12

ADVISOR: *Kristina Jones, Biological Sciences*

We are collaborating with Dave Jacke to design a new garden on campus, with a goal of growing edible plants in the most ecologically sound manner possible for our local environment. Trees and shrubs that bear the tastiest fruit are often difficult to grow, requiring lots of water, fertilizer, and other inputs for pest and disease control. We are researching appealing fruits with minimal needs, soil preparation, and landscaping methods that increase availability of existing water and nutrients, and supporting plant species that enhance soil fertility while helping to minimize pest and disease outbreaks. Together, our selected plants should form a self-sustaining long-term ecological community in which the major maintenance requirements are mowing the paths and harvesting the fruit! Our guide in this endeavor, Dave Jacke, is a landscape designer and author of *Edible Forest Gardens*, a comprehensive presentation of the vision, theory, design and practice of edible ecosystems.

Literature and the Arts

Live and Let Laugh (performance) Jewett Auditorium

Nisha Bedi '10, Art History, Ali Barthwell '10, French, Mary K. Batson '10, English, Olivia Kingsley '11, English, Simi Oberoi '11, Political Science and Art History, Kat Chen '12, History and Theatre Studies, Haley Harris '12, French, Katherine Byrnes '12, Economics, and Isabel Custodio '13
ADVISOR: *Sarah Wall-Randell, English*

Members of Wellesley's only improvisational comedy group Dead Serious present a look into our work as an on-campus performance

organization and joy-manufacturer. In our return to Ruhlman, we showcase our evolution as a group, most recently delving into the mysteries of long-form improvisation and intercollegiate performances. We will not only deliver a highly stimulating presentation including topics such as the motto "just say yes" and the relative merits of speaking in gibberish, but will also create a performance piece with absolutely no advanced preparation. No, we are not magicians; merely women with the courage to say, "leggings are not pants."

Art, Anxiety, and the Avant Garde (short talks) Founders Hall 120

The Poet as Viewer: John Keats, Wallace Stevens, John Ashbery

Sarah Case '10, English
ADVISOR: *Dan Chiasson, English*

The genre of poems about paintings, called ekphrasis, has fascinated poets from Homer to the present. In my senior thesis, I studied the role of visual art in the poetry of John Keats, Wallace Stevens, and John Ashbery. I examined questions such as how poets represent (or do not represent) visual works such as sculpture and painting in language and the role visual art plays in relation to desire and the imagination. In addition to considering traditional mediums of visual art such as painting and sculpture, I looked at how these poets incorporate visual information into their poetry, such as Keats's sonnet *Bright Star* which focuses on a speaker looking at an object and the attractions and problems of a solely visual engagement with the world. In my presentation, I will discuss a few poems that I analyzed in my paper within the context of my project as a whole.

La Divina Isabella: Orality, Textuality, and the Actress in the Commedia dell'Arte of the Late Sixteenth Century

Catherine Arnold '10, Italian Studies
ADVISOR: *Sergio Parussa, Italian Studies*

Isabella Andreini, actress, poet, and co-leader of the *Gelosi* troupe at the turn of the sixteenth century negotiated successfully between the poles of oral performance and literary production. She, like many *arte* actors and actresses, regularly borrowed fragments

of text, ranging from Petrarchan sonnets to *opuscoli* distributed in the piazza, in order to construct the “improvised” monologues and dialogues of her character on stage. These performances were then re-translated from oral to textual events as Andreini published collections of monologues, *scenari*, poems, songs, and letters. My presentation will show how Andreini’s identity as an actress shaped her literary output and vice versa; how in her published work we can discern the echo of her performances; and, ultimately, how text and performance interact in the *com-media dell’arte*.

A Case Study from Denmark: Is Regional Dance Dead?

Emma Wright '11, Art History

ADVISORS: *Samantha Cameron, Physical Education, Recreation, and Athletics, and Catherine Ulissey, Physical Education, Recreation, and Athletics*

In the nineteenth century, a Danish ballet dancer would have been instantly recognizable. She would have been trained exclusively in Copenhagen, and perform only Danish ballets. Today on the other hand, most members of the Royal Danish Ballet were born outside of Denmark and are as skilled in modern dance as in classical ballet. The globalization and internationalization of dance is particularly interesting in contemporary dance. This presentation will present original research based on performances and interviews with leaders from the Danish dance community. The history of Danish dance will be discussed as well as what the future may hold for the Scandinavian dance community. (Research supported by the Office of International Study and the Jean Havekotte Peggs and Fred Peggs Study Abroad Extension Grant.)

Modern America and Music (long performance) Pendleton West 220

Neo-romanticism, Modernism, and the Contemporary American Art Song

Bess Connors '10, Music and Neuroscience

ADVISOR: *Jenny O. Johnson, Music*

Many historians of post-WWII American classical music have focused exclusively on “Modernist” works: compositions characterized by atonality, rhythmic and textural complexity, and the use of serial (12-tone)

techniques. Yet even while Modernism was at its peak, emotionally expressive, tonal, lyrical, and so-called “Neo-romantic” works were also being composed. By analyzing and performing a selection of so-called “Modern” and “Neo-romantic” American art songs, I will question the extent to which Neo-romanticism was both an extension of Romanticism and a reaction to Modernism, and also assert the importance of Neo-romantic works in the history of contemporary American art music.

Dorothy Parker in Tritones: Writing a New Musical Language

Laura Staffaroni '10, Music and Psychology

ADVISOR: *Jenny O. Johnson, Music*

For my senior honors thesis, I chose to write a song cycle using the poetry of Dorothy Parker as text. Because of the limits presented by conventional Western tonal music, I developed a transposable, non-tonal musical language in which to compose. In this presentation, I will address the following questions: What are some alternatives to major and minor scales that other composers and theoreticians have previously developed? How might the concepts of tonic/dominant and major/minor apply to a non-tonal mode? I will also present excerpts from my song cycle, the harmony of which is based around a palindromic mode where diminished and augmented chords replace major and minor triads, and the “tonic” and “dominant” are related by an augmented fourth. Finally, I will discuss how I used this new musical language to express Dorothy Parker’s poetry.

George Sand’s *Mauprat*: A New Adaptation for a New Era (field studies, performance) Pendleton East 139

Janine Hegarty '10, Neuroscience and French

ADVISOR: *Catherine Masson, French*

I will present my French Honors thesis/Pamela Daniels Fellowship project: the writing and staging of my adaptation of George Sand’s 1837 novel, *Mauprat*. The author of the novel adapted the play herself in 1851 for the stage as a result of its extreme popularity. Her play received a lukewarm reception by the public and was criticized by critics of the era. The new adaptation, set as an eighteenth century courtroom drama,

chronicles the transformation of Bernard de Mauprat, from a savage into a civilized man as a result of education and love. I will discuss how I adapted a nineteenth century novel for the stage, focusing on the challenges of maintaining the central message of Sand while updating them for a new audience. Several scenes from my play will be performed, after which I will discuss the process of staging and directing based on Sand’s own techniques.

Political Development

War, Independence, and Leadership (short talks) Pendleton East 339

Crises, Contagion, and Leadership Changes

Chriss Cho '10, Economics and French

ADVISOR: *Olga Shurchkov, Economics*

The financial and economic crisis that began in 2007 quickly became a topic of much heated debate in the 2008 United States presidential election. However, thorough empirical analysis of the relationship between crises and leadership changes remains relatively inchoate due to two principal reasons, which my research seeks to address. First, the direction of causality between crises and political transitions remains unclear: which precedes the other? The goal of my research is to employ contagion as an instrument to study the causal effects of crises on leadership changes, controlling for various country-specific characteristics and variation across time. In addition, I utilize multiple criteria for the crisis variable, instead of focusing mainly on the decline in income as a proxy for all economic or financial shocks. Specifically, I observe three types of crises: banking crises, income crises, and currency crises.

Politics, Investments, and Instability in a Changing West African Geopolitical Dynamics

Halimatou Hima Moussa Dioula '10, Africana Studies, International Relations–Economics
 ADVISOR: *Donna A. Patterson, Africana Studies*

Discourse on growing foreign investments and on dysfunctional political structures dominates contemporary West African Francophone geopolitics. New economic partners such as China have opened different frontiers, a situation leading to a lessening regional hegemony from France, the traditional partner of most countries in the region. While some see this provisional autonomy as an opportunity to tackle the daunting task of successfully recreating post-colonial political structures, many governments have used this newfound autonomy to undermine democratic rule in their countries. Niger, one of the largest uranium exporters in the world, underwent a contested constitutional change in favor of indeterminate power rule despite threats of political isolation and economic sanction from ECOWAS, the Economic Community of West African States, and from the European Union. Ultimately, how has the emergence of these new markets, many of which profess a policy of non-interference in politics, changed the governance structure of West African countries?

How to Lose a War in a Just Cause: The Failure of Democracy in the Spanish Civil War (1936–1939)

Caitley Stevens '12, Economics, and Erica Saldivar '12, International Relations–Economics
 ADVISOR: *Elena Gascón-Vera, Spanish*

In the twentieth century, the traditional idea of Democracy was shaped and questioned by the totalitarian systems which developed during those hundred years. The rise and fall of the Soviets, Fascism, and Nazism were proof of its precariousness and ultimate success. One of the strongest democratic movements of that period, however, occurred in Spain in 1931 with the birth of the Second Spanish Republic. When fistcuffs erupted between the newborn Republic and the Bourgeoisie supported by the Fascist army—igniting the Spanish Civil War

(1936–1939)—the cries of democratic Spain went unheeded by many western powers. At its beginning, the majority of the population supported the democratic transformation of the country, but by war's end, democratic sympathies had become a death sentence. What factors led to such an outcome? How did a burgeoning democratic society with majority support fail? Our presentation examines the complex factors that lead to a Fascist victory.

Science and Technology

Perception and Memory (short talks) Pendleton East 239

Color Memory and Color Discrimination

Kate Munger '10, Neuroscience and Anthropology
 ADVISOR: *Bevil Conway, Neuroscience*

Two studies on color perception in humans will be presented: the first on color memory and the second on color discrimination. Color memory describes the perceptual phenomena where familiar objects appear more saturated than they truly are. This first line of research explores how color memory influences artists' perceptions and consequently renditions of familiar objects. The second study in this presentation analyzes the human ability to discriminate between colors. Subjects were given a delayed match to sample, two alternative forced choice test. It has previously been demonstrated that the human ability to discriminate between colors is not uniform over the visible spectrum. This study seeks to characterize these non-uniformities in humans and compare them to the discriminatory performance of trichromatic macaque monkeys given the same task.

Conscious Perception

Jillian Cunningham '10, Neuroscience, Neria Douglass '10, Neuroscience, and Linnea Herzog '12, Neuroscience
 ADVISOR: *Mike Wiest, Neuroscience*

The Wiest lab's research centers on decoding the neural mechanisms responsible for conscious perception, also known as the neural correlates of consciousness or NCC. We are training rats to perform a detection task in

which they must consciously perceive an auditory stimulus. We will eventually reduce the volume of the tone to a level that can be detected only 50% of the time. This way, the same stimulus may or may not produce a conscious perception, depending on whether the rat detects the stimulus or not. Using electrode arrays, we will record from different cortical regions as the rats perform this detection task in order to determine which regions of the brain are involved in generating a conscious perception, and whether neuronal synchronization is required. (Research supported by the Janina A. Longtine Fund for Summer Research in the Natural Sciences and Sherman Fairchild Foundation.)

I Never Forget a Face: The Link between Face Memory and Career

Emily Strong '10, Psychology
 ADVISOR: *Jeremy Wilmer, Psychology*

We've all heard of politicians who "never forget a face," but despite empirical reports, the phenomenon has never been studied before. We proposed that individuals in careers that involve more social interaction have a greater ability to remember faces. Participants in the fields of politics, business, and pastoral work completed a demographics survey and took the Super-Recognizer form of the Cambridge Face Memory Test (CFMT). Results indicate that individuals in politics are significantly better at face memory tasks in comparison to controls, while individuals in business perform within the normal range, and individuals in pastoral work may perform worse. Though contradicting our hypothesis, these results provide important insights into individual differences in face recognition and indicate that people in politics are an important group to target for further face memory research.

The Pleasure of Motion (short talks) Science Center 278

The Effect of Short-term Meditation Training and Aging on Attentional Processing

Priya Josyula '10, Neuroscience
 ADVISORS: *Margaret M. Keane, Psychology, and Catherine Kerr, Harvard Medical School*

Attention is a fundamental cognitive process that defines human experience. However, there are limits on our capacity to attend

to information that is being presented to us. Meditation may be one way to enhance this attentional capacity, helping individuals achieve greater attentional flexibility. The focus of this study was on a phenomenon known as the attentional blink. During this phenomenon, an individual's attention is captured by one stimulus, which prevents attention to other stimuli for a brief period of time. The effect of seven days of meditation on the attentional blink phenomenon was measured. The experimental group included 24 older meditators and the control group included 24 age-matched individuals who did not engage in meditation. The attentional blink was also examined in 24 younger individuals who did not engage in meditation. Performance on questionnaires measuring empathy, rumination, and stress was also investigated before and after seven days of meditation.

Skeletal Muscle Bloodflow and Energy Cost during Locomotion of Rainbow Trout *Oncorhynchus mykiss*

Samira Daswani '12, Biological Sciences, and Grace Jung '11, Biological Sciences
 ADVISOR: *David J. Ellerby, Biological Sciences*

The muscles of swimming fish expend energy to maintain balance and maneuverability, power forward propulsion, and drive respiratory movements. The aim of this study is to investigate the relative energetic costs of these different skeletal muscle roles in Rainbow Trout, *Oncorhynchus mykiss*, during undulatory swimming. By injecting microspheres into trouts' bloodstream to trace muscle blood flow and by monitoring oxygen consumption in a flume tank, the correlation between blood flow, muscle oxygen consumption, and aerobic energy expenditure during active swimming is being investigated. Thus, by measuring blood flow through looking at microsphere concentration in specific areas of skeletal muscles, their aerobic energy expenditure is determined. Results indicate the difference in functional cost among groups of skeletal muscle, the increase in blood-flow per gram of muscle from anterior to posterior myotomes, and the transition from branchial pumping to ram ventilation during swimming. (Research supported by the National Science Foundation and Howard Hughes Medical Institute.)

Versatile Design of a Chamber for Environmental Photochemistry of Small Molecules Using the Velocity Map Imaging Technique

Madeline Elkins '10, Chemistry
 ADVISOR: *Wilton L. Virgo, Chemistry*

Among the fundamental ideas of physical chemistry is the study of the nature of chemical reactions. In general chemistry classes, chemical reactions are described by simple equations such as $A + B \rightarrow C + D$; however, this gives little information about how the reaction actually takes place on a molecular level. As physical chemists, we understand reactions as a series of transitions between known quantum mechanical states, so by mapping how energy flows between these states over the course of a reaction, we know why and how the reaction occurred. As a primary goal, the project consists of the design and construction of an experimental vessel for gaining this type of state-specific information for gas-phase photodissociation reactions. An understanding of the process of photodissociation, $A + \text{light} \rightarrow C + D$, is crucial to our understanding of our atmosphere and thus combating problems like global climate change. (Research supported by the Office of the Dean of the College.)

Causes and Consequences of Precision of Smooth Pursuit Eye Movements

Lily Tsoi '11, Neuroscience
 ADVISOR: *Jeremy Wilmer, Psychology*

Smooth pursuit eye movements refer to the ability of the eyes to follow a moving object smoothly, e.g., watching a baseball fly over a field. Previous studies in our lab have found a small relationship between smooth pursuit precision and both athletic and video game playing abilities. Surprisingly though, a particularly strong relationship was found with gender, favoring males. We have conducted a replication of the previous studies to see if we would again find a gender difference, and extended those studies to probe for a relationship between smooth pursuit precision and current and/or prenatal hormone levels, which are responsible for large sex differences in physical abilities and a variety of cognitive tasks. (Research supported by the Office of the Dean of the College.)

A Day in the Life of a Cyanobacterium (panel) Pendleton West 116

*Cyanobacteria are photosynthetic bacteria of ecological and evolutionary importance. Since the evolution of cyanobacteria over 3 billion years ago, these organisms have been impacting earth's environment, from the formation of our oxygenic atmosphere to responses to pollution and global warming. Three physiological and biochemical properties of the cyanobacterium *Synechocystis* are studied in our lab: bioremediation, acid-stress response, and biofilm formation.*

Combating Pollution: The Application of Cyanobacteria for Lead Bioremediation

Lauren F. Allison '10, Biological Sciences
 ADVISOR: *Mary M. Allen, Biological Sciences*

Water pollution is a major human health problem that limits access to clean drinking water worldwide. Lead is a heavy metal that is commonly found at unsafe levels in freshwater due to pollution. Lead can cause irreversible damage to the reproductive, nervous, and cardiovascular systems. Bioremediation, the use of biological organisms for the treatment of polluted environments, is a promising method for water decontamination. Cyanobacteria have been demonstrated to absorb heavy metals. This project examines the potential of the cyanobacterium *Synechocystis* for lead bioremediation. To allow easy application and removal from water systems, the bacteria are immobilized in beads made of alginate, a substance derived from brown algae, which contributes to lead removal. The lead removal properties of cyanobacteria immobilized in calcium-alginate beads are being characterized for potential application in environmental lead removal. (Research supported by the Merck/AAAS Undergraduate Science Research Program and the Howard Hughes Medical Institute.)

Managing Stress: How a Cyanobacterium Responds to Acidic Conditions

Gloria Lee '10, *Biological Sciences*

ADVISOR: Mary M. Allen, *Biological Sciences*

The acidification of natural waters is a problem that affects the ecosystem at all levels. The goal of this research is to study how a model bacterium, *Synechocystis* sp. strain PCC 6803, responds to such conditions; understanding the consequences at a microbial level may provide answers for a multitude of organisms. To study the response due to acidic conditions, changes in protein expression were examined. A variety of lysis methods were utilized and compared for the optimization of protein extraction. Extracted proteins were separated by charge and molecular weight using 2-D gel electrophoresis, revealing differential protein expression depending on the pH of the environment. Proteins were treated with trypsin for analysis using MALDI-TOF Mass Spectrometry, and are being analyzed for identification. (Research supported by the Brachman Hoffman Fund, Wellesley College, and the Howard Hughes Medical Institute.)

A Sticky Situation: Biofilm Development in *Synechocystis* sp. strain PCC 6803

Celeste Mallama '10, *Biological Sciences*

ADVISOR: Mary M. Allen, *Biological Sciences*

Biofilms are defined as communities of microorganisms that aggregate and secrete a sticky extracellular matrix consisting mainly of polysaccharides. Although composed of microscopic organisms, these conglomerates of microbes can have a huge affect on issues ranging from public health to plumbing. The goal of this research project is to better understand the composition of these cooperative communities and factors affecting their growth. To study this biological phenomenon in *Synechocystis*, biofilm communities were grown and analyzed. Confocal microscopy was used to observe the spatial configuration of cells to each other and to their extracellular matrix over time. High performance liquid chromatography was used to analyze mono-saccharidic components of the extracellular matrix. (Research supported by a Dean of the College grant and the Howard Hughes Medical Institute.)

Cross-cultural Research

Forgiving Medicine (short talks) Pendleton West 117

Philosophy for Physicists: Bioethics Training for Undergraduate Science Students

Kathryn Soderholm '10, *Biochemistry and
Peace and Justice Studies*

ADVISOR: William Coleman, *Chemistry*

Bioethics is the branch of philosophy that deals with the ethics of science, medicine, and related research and technology. As each new development provokes further bioethical debate, the question arises as to the role of scientists in such debate. Currently, scientists do not offer much beyond facts and research to bioethical debate, despite the fact that they have the most active role in the overall process. Few scientists have bioethics training, although the number is increasing. However, there is little requirement for or availability of such training at the undergraduate level. This talk presents a series of proposals to add bioethics to the science curriculum of Wellesley College, either by adding a bioethics requirement to the relevant majors, or, perhaps more effectively, by incorporating bioethics training into class curricula.

HIV Prevention: Controversy, Christ, and Condoms

Erin Duffy '10, *Religion*

ADVISOR: Stephen Marini, *Religion*

Faith-based organizations provide significant resources for HIV response and their approaches to HIV prevention differ from most secular strategies. These diverging positions have sparked global controversy in the media, among public health professionals, and within HIV-affected communities. Most discussion focuses on each party's respective promotion of abstinence and condom use in preventing HIV transmission. My research explores the nuances in the faith-based and secular rhetorical and ethical frameworks that result in these practical differences. I further evaluate the effectiveness of various HIV prevention strategies from public health perspectives with case studies, and consider issues of agency and social justice. I am writing about these issues in my Religion Honors Thesis with a focus on the Catholic

Church and the United Nations Joint Programme for HIV/AIDS. Through this work I hope to build an understanding of each party's position, and identify opportunities for collaboration and improvement of global HIV-related health services.

Forgiveness, Reconciliation, and Accountability: A Critique of a Contemporary Forgiveness Paradigm

Hailey Huget '10, *Philosophy*

ADVISOR: Nicolas de Warren, *Philosophy*

In the past twenty years, forgiveness and reconciliation have become important topics of both theoretical and practical debate. What constitutes forgiveness, who is eligible for forgiveness, and what wrongdoings are "forgivable" are all questions that have attracted the attention of politicians, philosophers, psychologists, and political scientists. The philosopher Charles Griswold, in his work *Forgiveness: A Philosophical Exploration*, offers a comprehensive response to these questions by positing his own theory of forgiveness. While Griswold's theory is a unique and valuable contribution to the current discourse on forgiveness, I argue that his theory contains serious flaws that ultimately undermine his own theoretical goals.

The Doctor's Coat Doesn't Quite Fit!

Hannah Dornbusch '10, *Economics*

ADVISORS: Connie Bauman, *Physical
Education, Recreation, and Athletics*, and
Jocelyne Dolce, *Biological Sciences*

In summer 2009, I shadowed various medical professionals to find a career that would be compatible with my career goals. After exploring different options in healthcare, I decided to dedicate an independent study project to disseminate information and enhance awareness for these careers among Wellesley students. I organized a six-member health professions panel, where each panelist shared a typical day in their chosen career. I administered a survey before and after Wellesley students heard the panelists speak about their careers. The surveys measured Wellesley students' knowledge of allied health professions outside the MD career path. Find out how the panel discussion influenced Wellesley students' attitudes surrounding future career choices.

Economic Issues

Global Crises, Global Solutions (panel) Pendleton East 239

Economists from around the world formed the Copenhagen Consensus in 2004 to set priorities in addressing global challenges and compete for a hypothetical \$50 billion to fund policies to address these challenges. In ECON 312 we simulated the Copenhagen Consensus by forming groups to examine the challenges and the proposals to address them. The aim of each group was to persuade our fellow classmates that our global proposal would make the greatest impact on the world's population.

Hunger and Malnutrition

Kerry Scanlon '10, Economics and French, and Bebe Zhao '10, Economics and Psychology
ADVISOR: *Joseph P. Joyce, Economics*

The first Millennium Development Goal is to eradicate poverty and hunger. While huge strides have been made in reducing poverty, under-nutrition still affects more than 88% of the developing world's population. This is shown by the fact that more than 146 million children are underweight for their age. In this presentation, we discuss the two invention mechanisms highlighted in Sue Horton's paper: those which involve or are similar to primary health care programs (such as micronutrient interventions), and those which largely involve behavioral changes (such as community outreach programs).

Global Crises, Global Solutions— Financial Instability

Bellina Tse '10, Economics and East Asian Studies, Michell Dong '10, International Relations—Economics, and Lehui Liang '11, Economics
ADVISOR: *Joseph P. Joyce, Economics*

Financial instability has a great impact on the functioning of the global economy. Our project is based on the paper by Barry Eichengreen, that was discussed during the Copenhagen Consensus conference to address this particular challenge. In light of the recent global financial crisis, Eichengreen's ideas and proposals are especially useful to understanding the causes and possible solutions to banking and currency crises. Using cost-benefit analysis, we will evaluate four methods

to prevent financial instability—re-regulation of financial markets, capital controls, adopting a global common currency and creating special bond markets for debt denominated in currencies of emerging markets. The results of the analysis have profound policy implications for the World Bank, the IMF and governments worldwide to better manage financial instability.

Terrorism

Sara Propp '10, Economics, and Alexandra Solimano '10, Economics and Italian Studies
ADVISOR: *Joseph P. Joyce, Economics*

Since September 11, 2001, the idea of terrorism has become a part of our national dialogue and daily lives. Our presentation seeks to examine the costs and benefits of potential solutions to this global problem. Unlike some other global crises, transnational terrorism kills relatively few people every year, yet the fear of an attack is pervasive. Consequently governments pour millions of dollars into anti-terrorism campaigns. Terrorism is not often examined from an economic perspective and many of these solutions are not cost efficient. In our presentation we will illustrate the difficulties in finding a cost efficient and politically viable solution.

Money Matters (short talks) Pendleton East 339

Foreign Shocks and Domestic Policies: Evidence from Credit Default Swap Spreads

Leslie Sheng Shen '10, Economics and Political Science
ADVISOR: *Joseph P. Joyce, Economics*

Since the onset of the era of financial globalization, emerging market economies have sharply increased their holding of international reserves, from approximately 8% of their GDP in 1990 to almost 30% of GDP in recent years. One popular explanation for this development is that reserves can serve as a self-insurance tool to insulate domestic economies from foreign adverse shocks. As economies have become more financially integrated, the potential for sudden reversals in capital flows and the international transmission of financial stress has increased as well. Therefore, it is especially important to assess the effectiveness of reserves as a self-insurance

policy tool. This study empirically investigates whether countries with higher levels of reserve assets were able to better withstand the shock from the U.S. subprime crisis. Specifically, we use sovereign credit default swaps (CDS) as an indicator of financial vulnerability and analyze the relationship between CDS spread movements and reserve accumulation.

Who Owned Early Corporations? Wealth, Status, and Stockholding in the Early Nineteenth Century U.S.

Jacqueline Valentine '10, Economics
ADVISOR: *Eric Hilt, Economics*

The proliferation of business corporations in the early nineteenth century transformed the American economy. Critics of these enterprises claimed that they were created and owned by wealthy elite, and served interests that were "odious to the people." But little is known about who actually owned shares in early corporations. Using lists of corporate shareholders collected from capital taxes imposed on corporations in New York, which were matched to early property tax records, I compare the wealth and status of those who owned stock in corporations to the general population both in 1791, when there were only two corporations in the state, and in 1826, when there were hundreds. The results shed light on the extent to which ordinary people participated in the profits from corporations during this formative period in American history. (Research supported by the Office of the Dean of the College.)

The Effect of Bankers on Firm Boards: Evidence from New England, 1871–1880

June Wang '10, Economics and Political Science
ADVISOR: *Eric Hilt, Economics*

Does having bank managers on a firm's board of directors help or harm the firm? Theoretically, there are both costs (such as conflicts of interest) and benefits (such as the monitoring role the bankers could play) to bank board representation. Empirical research on Germany and Japan, where companies with close bank relationships depend heavily on banks for finance, banks are represented on their boards, and lending banks are large shareholders, provide systematic evidence that bank representation has a positive effect on firm performance. Just as German and

Japanese banks are credited with the post-WWII industrial successes of their respective economies, banks in nineteenth century New England were a crucial part of its industrialization, and had close ties to industrial firms. Using data on Massachusetts corporations from the 1870's, this research tests the hypothesis that bank board representation helped companies weather the Panic of 1873 and the ensuing seven-year depression.

Environmental Issues

Environmental Science (poster session) Science Center Focus

The End of the Line: Impacts of Offshore LNG Terminals on Native Fish Populations

Catherine Caruso '10, Biological Sciences
ADVISOR: *Emily Buchholtz, Biological Sciences*

I spent last summer working on a research vessel with scientists in the Edgerton Research Lab at the New England Aquarium. Throughout the summer we used sonar equipment to collect data on fish living around liquid natural gas (LNG) terminals located 13 miles offshore in Massachusetts Bay. These LNG terminals were recently constructed to help meet increasing energy needs in New England, and consist of extensive subsurface structure. For my senior thesis, I am using our sonar data to investigate how this subsurface structure may be impacting native fish populations. More specifically, I am focusing on how fish abundance and size vary based on proximity to structure. My work is especially interesting because it demonstrates how scientific research can be utilized in real world situations. Ultimately, I hope to assess how offshore artificial structures can alter fish population dynamics, and in turn, affect the surrounding ecosystems. (Research supported by a Mulhern Summer Research Award.)

Biomagnification and Bioaccumulation of Mercury in a Forest Food Web

Myriam Kuusipalo '12, Biological Chemistry
ADVISOR: *Nicholas Rodehouse, Biological Sciences*

Research on chemical pollutants is extensive because of their environmental and human health effects. Mercury is of concern because organisms can bioaccumulate mercury in the form of a toxic organic compound, methyl mercury. In food webs, levels of mercury can biomagnify, reaching high enough levels to increase mortality, reduce fertility, and cause other neurological effects. Although models representing mercury bioaccumulation and biomagnification have been constructed for aquatic food webs, they do not exist for terrestrial food webs. We used food web data collected during 2008 and 2009 to build and parameterize a model of the flow of mercury of a forest food web at the Hubbard Brook Experimental Forest, White Mountains, New Hampshire. We used this model to assess how changing biotic and abiotic factors might affect mercury bioaccumulation and biomagnification. (Research supported by an MSP Grant, Wellesley College, and U.S Fish & Wildlife Service, NSRC program.)

Using GPS and GIS to Catalog and Map the Wellesley College Botanic Gardens

Rachel Doyle '13 and Maia Fitzstevens '13
ADVISOR: *Marcy Thomas, Biological Sciences*

The goal of this project was to replace the outdated map of the Wellesley College Botanic Gardens hanging in the Science Center with a new map featuring recent data and utilizing the newest technology. A hand-held GPS unit was used to catalog all the labeled trees in the Wellesley College Botanic Gardens. Then, using Geographic Information Systems (GIS), the data points were overlaid with a map of the campus to create an accurate and cohesive map of the Botanic Gardens. The map shows 330 individual trees and will hang permanently in the Science Center. In addition it is a living document: new data can be entered as more becomes available or as technology improves. This map could serve as a resource to the Wellesley College community for both academic and recreational purposes.

Making the Grade: An Analysis of Sustainability Rankings in Higher Education (panel) Science Center 396

Lauren Fink '10, Environmental Studies, Melanie Kazenel '10, Environmental Studies and Spanish, Sooyeon Kho '11, Environmental Studies and Psychology, Kelsey McFadden '10, Environmental Studies, Caitlin McGlynn '11, Environmental Studies, Shaina Meyer '10, Environmental Studies, Alana Nelson '10, Environmental Studies and Economics, Lindsey Reed '10, Environmental Studies and Political Science, Devaja Shafer '10, Environmental Studies, Katie Wingate '10, Cinema and Media Studies and Environmental Studies, and Jane Zhou '10, Economics and Environmental Studies
ADVISOR: *Beth DeSombre, Environmental Studies/Political Science*

Amidst many school-wide changes in the past few years, Wellesley has made major strides in sustainability. We improved our grade on the Sustainable Endowments Institute's sustainability report card, are pursuing LEED certification in the renovation of Alumnae Hall, and are installing a solar panel array. This spring, the Environmental Decision-making class investigated "green ratings systems" for college campuses. High ratings from sources such as the Princeton Review and the Association for the Advancement of Sustainability in Higher Education would increase our visibility to stakeholders, including donors and prospective students. More importantly, participating in ratings systems could also provide feedback and suggestions for future sustainability decisions. Not all ratings systems, however, prioritize behavior that makes environmental or fiscal sense for our campus. We invite you to hear the results of our semester-long study, learn how Wellesley would do on a variety of rankings, and find out the truth behind the numbers.

Literature and the Arts

Tango by Piazzolla: A Journey into the Life of Astor Piazzolla (performance) Jewett Auditorium

Veronika Blinder '10, Biology and Music, Nicolle Strand '10, Bioethics, and Virginia Hung '13
ADVISOR: *Jan Pfeiffer, Music*

Astor Piazzolla (March 11, 1921–July 4, 1992) was an Argentine composer who wrote music for many different instruments and ensembles. His compositions are known for their tango flare, but also incorporate classical and jazz elements. Some of his most important works for piano trio were his *Four Seasons of Buenos Aires*, *Oblivion*, and *Muerte del Angel (Death of the Angel)*. The *Four Seasons of Buenos Aires* was meant as homage to Vivaldi's original *Four Seasons*, quoting from familiar pieces in the string repertoire. *Oblivion* is a short beautiful piece that has been featured in popular films and played all over the world. And *Muerte del Angel* was originally composed for a play called *Tango del Angel*, in which an angel heals the spirits of the citizens of a town in Buenos Aires, and is subsequently killed. This compilation of three works will provide an interesting insight into Astor Piazzolla's fascinating life and career.

Musical Energy (performance) Pendleton West 220

Outside the Shutter Box: The Process of Making a Musical

Anita Leechor '10, Music, and Andreyana Piplica '10, Computer Science
ADVISOR: *Jenny O. Johnson, Music*

Jack in the Shutter Box, a musical written and produced by Wellesley students, tells a story of dreams and denial. The two-year writing and production process challenged librettist Andreyana and composer/lyricist Anita in every way: as writers, as planners, as implementers, as friends. From holding auditions to holding our breaths opening night, every facet of the show both tested what we knew and taught us what we could do. In this presentation we will discuss the unique experience of collaboration and creation in a college setting and the circumstances that shaped the production of our show.

Strings + Jazz + Energy = Synergy!

Camille Doykan '10, Neuroscience, Chindhuri Selvadurai '10, Neuroscience, Victoria Boyd '12, Chemistry, Alison Lee '12, and Laura Stearns '12
ADVISOR: *Paula Zeitlin, Music*

Although string instruments are traditionally associated with elegant classical compositions and fiddle music, there is also a growing presence of strings in the world of improvisational jazz. Synergy is an on-campus string ensemble that delves into this genre little known to most musicians and music lovers. Structured as a classical string ensemble with violins, violas and cellos, Synergy is a versatile group with a repertoire that includes all types of jazz, including Latin, rock, and blues. We invite you to explore the fusion of jazz and string instruments as we play some familiar and some new pieces!

Text as Image & Books as Art: An Introduction to Book Arts Program at Wellesley (interactive teaching presentation) Clapp Library–Book Arts

Molly Eckel '12, Art History and French, and Emma Wright '11, Art History
ADVISOR: *Katherine McCannless Ruffin, Book Arts Program*

In ARTS 222, *Introductory Print Methods: Typography/Book Arts*, students spent a semester investigating the intersection of type, image, and art. Students explored the creative possibilities of artists' books through the disciplines of papermaking, letterpress printing, bookbinding, photography, and drawing. The interdisciplinary field of Book Arts allowed students to draw from all academic and creative disciplines to imagine and create artists' books. The close relationship between the Book Arts Lab and Special Collections afforded students the opportunity to examine and take inspiration from artists' books in Wellesley's collection. In this interactive presentation, participants will be introduced (or welcomed back!) to the Book Arts Program. Participants will print a keepsake and create a unique book, as well as view examples of student work and books from Special Collections.

All the World is Our Stage (performance) Schneider Theatre, Black Box

Sarah Moazeni '10, Theatre Studies, Bailey Brame '10, Economics and Biology, Elizabeth Stone '10, Theatre Studies and English, Ashley Gramolini '10, Theatre Studies, Caitlin O'Connell '10, Theatre Studies, and Rachel Kaston '10, American Studies
ADVISOR: *Nora Hussey, Theatre Studies*

Now a Ruhlman tradition, Wellesley College Theatre student directors and actors collaborate to recreate theatrical highlights of the 2009–2010 season. This year the Wellesley Theatre Department and Wellesley College Upstage showcased an eclectic season of powerful, funny, distressing, heart-breaking, artistic, and moving productions. Interwoven with music, dance, and languages from all across the country and the world, Wellesley College Theatre has indeed proved that theatre can make a difference. These pieces remind us of our own struggles, hopes, fears, and dreams and strengthen our connection to each other as human beings. From your dining room table to an artist's studio in Iraq, from Canada to Monte Carlo, from Octavio Solis to Shakespeare, these pieces awaken our hearts and spirits through the power of the stage.

“Where We Are From, Where We Are” (panel) Science Center 278

Jenny Peng '10, English, Creative Writing, Duygu Ula '10, English, Creative Writing and Cinema and Media Studies, Emma Lueger '10, History and English, Creative Writing, and Mira Sethi '10, English, Creative Writing
ADVISOR: *Marilyn Sides, English*

Four selections from Creative Writing thesis projects. In her personal essay, Jenny depicts the struggle for identity as a Chinese-American, the complications of navigating two vastly different cultures. Duygu's poems test her ties with her homeland, Turkey, and the people she left behind there. Mira's short fiction, set in Lahore, Pakistan, describes a world of “society-aunties” and rebellious teenagers, of an intercultural relationship flowering in a hostile environment. Emma's young adult short stories capture the joys and struggles of growing up in a small Mid-western town, where the evening news revolves around the state football team.

Science and Technology

Molecular Bioscience (poster session) Science Center Focus

Linking the Brain with Neuropeptidases

Jana Qiao '11, *Biological Chemistry*

ADVISOR: Adele J. Wolfson, *Chemistry and Office of the Dean of the College*

Estradiol is an ovarian steroid hormone essential to reproductive function and requisite to a variety of other biological processes. Its release is regulated by a cascade initiated by gonadotropin-releasing hormone (GnRH). GnRH itself is broken down by the neuropeptidases thimet oligopeptidase (TOP) and prolyl endopeptidase (PEP). We hypothesized that estradiol may directly or indirectly affect TOP and PEP, thereby refining control of GnRH activity. In this study, fluorimetric activity assays were used to analyze how estradiol alters TOP and PEP enzymatic activity in several mouse brain regions involved in reproductive physiology. (Research supported by grants from Howard Hughes Medical Institute and NSF-REU.)

How Brain Enzymes Affect Male Sex Hormone Levels

Daryl Selen '10, *Neuroscience*, and Tania

Dhawan '11, *Biological Sciences*

ADVISOR: Adele J. Wolfson, *Chemistry*, and Office of the Dean of the College

The steroid hormone testosterone has many important functions in males, including the development of sex organs, maturation of sperm, maintenance of the reproductive system and secondary sex characteristics. Testosterone production in the testes is regulated by a well-established pathway, including positive and negative feedback within the pituitary and hypothalamus. However, other enzymes located in the testes may also regulate this pathway. One such enzyme is thimet oligopeptidase (TOP), an endopeptidase that hydrolyzes short peptides. TOP is found throughout the body, but is most catalytically active in the testes and brain. We hypothesized that changes in TOP activity could affect the production of testosterone. Our experiments showed that a specific TOP inhibitor affected circulating testosterone concentrations in male mice, as

well as TOP activity in the testes and brain. This study can provide insight into whether TOP regulates testosterone production and/or secretion in the testes to influence behavior and physiology. (Research funded by Merck/AAAS Undergraduate Science Research Program and Wellesley College.)

Identifying the Role of Calcium during the Reduction of the First LNR

EunJe (Angie) Seo '12, *East Asian Studies*

ADVISOR: Didem Vardar-Ulu, *Chemistry*

hN1LNRA is the first of the three tandem Lin12/Notch Repeats in the human Notch1 receptor that regulates cell fate decisions. Previous work has shown that Ca^{2+} is required for the correct folding of this repeat via a unique set of three disulfide bonds. The goal of this project is to investigate the role of calcium in stabilizing these disulfide bonds in the folded protein. Our hypothesis is that the amount of calcium in the environment will impact the minimum redox potential required to reduce hN1LNRA. To test this hypothesis we have exposed folded hN1LNRA in varying amounts of calcium under identical initial redox potential to increasing amounts of the reducing agent DTT under anaerobic conditions. We assayed samples at various time points using High Performance Liquid Chromatography (HPLC) and quantified the ratio of folded vs. reduced protein to determine how the concentration of Ca^{2+} in the environment affected this ratio.

Molecular Genetic Characterization of the PATL Gene Family of *Arabidopsis thaliana*

Jessica H. Lee '12, *Divya Gopinath '12,*

and Elze Rackaityte '13

ADVISOR: T. Kaye Peterman, *Biological Sciences*

Patellin1 (PATL1), one of a family of proteins in the plant *Arabidopsis*, localizes to the cell plate where it is thought to function in membrane trafficking. We are analyzing spatial gene expression patterns and knockout mutant phenotypes to determine which of the PATLs are functionally redundant and which serve distinct functions. A previous study showed that PATL1 and PATL3 are coexpressed in developing vascular tissue. Preliminary data suggested that PATL1 and

PATL3 mutants exhibit vascular patterning defects, however, a more in depth study found no difference from wild-type. Due to evidence of functional redundancy, we are using RNAi to create a PATL1/PATL3 double mutant that will be examined for vascular defects. Additionally, we have explored differences in PATL1 and PATL3 expression patterns in the root cap and hairs. Finally we have produced transgenic plants that will be used to examine the spatial gene expression patterns of PATL2, PATL4 and PATL6.

Connections between Cytoplasmic Mitotic Cyclins and Cell Wall Integrity in *Saccharomyces cerevisiae*

Kaylyn Williamson '11, *Biological Chemistry*

ADVISOR: Jennifer Hood-DeGrenier, *Biological Sciences*

Our lab has found that cytoplasmic localization of the four partially redundant budding yeast mitotic cyclins (Clb1-4) is important for maintaining cell wall integrity and thus viability. We are using Western blotting and a *LacZ* reporter assay to examine activation of the cell wall integrity (CWI) signaling pathway in cells that express a nuclear-restricted Clb2 protein as the sole form of mitotic cyclin. Our preliminary results suggest that CWI signaling is elevated in cells that lack cytoplasmic mitotic cyclins. Additional results will be presented in this poster. (Research supported by a Roberta Dey Staley and Karl A. Staley Fellowship for Cancer Research at Wellesley College.)

Life in a Variable Oxygen Environment: A Molecular Study of K_{ATP} Channels in the Hearts of Hypoxia-acclimated Goldfish

Thanh Thu T. Ngo '10, *Biological Sciences*, and

Stefanie Chan '10, *Neuroscience and Spanish*

ADVISOR: John Cameron, *Biological Sciences*

Lack of oxygen in mammalian tissues can quickly lead to cell death. However, some ectotherms, including the goldfish (*Carassius auratus*), can survive throughout the year in freshwater ponds that are highly variable in oxygen content. A number of studies have found that acclimation to low oxygen can increase an animal's tolerance to subsequent hypoxia exposure, while others have attributed to ATP-sensitive potassium (K_{ATP}) channels the capacity to confer protection to

cardiac muscle under those conditions. Our lab employed a quantitative PCR technique to study the molecular changes associated with regulatory and subunit proteins of K_{ATP} channels that may have cardioprotective roles under low oxygen conditions. Results using *bactin1*, *arp* and *ubi* as reference genes showed a clear up-regulation in the Kir6.2 subunit of K_{ATP} channels and a down-regulation in the hypoxia-inducible factor (HIF-1 α) regulatory protein in fish acclimated to moderate hypoxia. (Supported by the Howard Hughes Medical Institute and Brachman Hoffman Fund.)

Perception and Memory (poster session) Science Center Focus

You Look So Familiar!: A Study of the Relationship between Personality and Face Memory

Christine Chen '10, Neuroscience, and Sarah Koopman '11, Neuroscience

ADVISOR: *Jeremy Wilmer, Psychology*

When you walk into a classroom or a party and scan the room full of people, you look to see if you spot any familiar faces. The faces that you immediately identify are probably your friends or people you've met many times before. Some people have excellent face memory and can recognize someone even if they only briefly saw the person a long time ago. These people are Super Recognizers. In our study, we used the Cambridge Face Memory Test to measure subjects' facial memory as well as the Mind in the Eyes test to measure subjects' perception of facial emotion. We also measured subjects' personality using scales such as the Ten Item Personality Measure and Narcissism Personality Inventory. Our goal was to see if subjects with certain personality traits or qualities had either better or worse face memory or perception of facial emotion.

A Rodent Model for View-invariant Object Recognition

Flo Doo '10, Neuroscience, Jemimah Dorillas '12, Neuroscience, Galina Gagin '12, Neuroscience, Quynhdiem Lam '12, Marlie Philiossaint '10, Neuroscience, Christina G. B. Scavuzzo '12, Sonja Swanbeck '12, Neuroscience, and Mijeong Takahashi '12, Neuroscience

ADVISOR: *Bevil Conway, Neuroscience*

Within the visual system of mammals, evidence suggests that parallel tracks process information about color, form, and motion. Our lab is interested in identifying the neural architecture and cell-to-cell computations involved in this process. Currently we are focused on dismantling the puzzling computational problem that is object recognition. In humans, only two distinct views of a novel stimulus are required to establish view-invariant object recognition. We are currently evaluating view-invariance in squirrels and rats using a 2-alternative forced-choice behavioral task. Our goal is to then use tetrode arrays in alert behaving squirrels to monitor single unit neuronal activity in a variety of brain areas. (Funded by Wellesley College.)

Interpersonal Distances as a Function of Ethnicity

Emily Hung '10, Psychology, DongHwa Kim '10, Psychology, and Catherine Ok '12, Psychology

ADVISOR: *R. Steven Schiavo, Psychology*

What comes to mind when you hear the word, "ethnicity"? Skin color? Food? Interpersonal distance is probably not a concept that many associate with ethnicity. However, Edward Hall (1966) suggests that preferred interpersonal distances between individuals can be significantly influenced by one's ethnicity. In his study, Arabs were more likely to stand at closer distances while facing other individuals than were their American counterparts. The purpose of the present research was to expand upon Hall's findings by examining preferred interpersonal distances between Asian and Caucasian students at Wellesley College. Contrary to Hall's findings, however, the results of our study indicated that interpersonal distance was not significantly related to ethnicity among these two groups. How can we explain such difference in results? Come and find out!

Investigations on Disease (poster session) Science Center Focus

Combating TB: Synthesis and Properties of Potential Antitubercular Agents

Jenny Chang '11, Biochemistry

ADVISOR: *Michael Hearn, Chemistry*

The World Health Organization estimates that a third of the world's population is infected with tuberculosis (TB), with new cases occurring at a rate of one per second. In 2007, there were an estimated 13.7 chronic active cases, 9.3 million new cases, and 1.8 million deaths, mostly in developing countries. Currently, the main challenges for tuberculosis control are the development of multidrug-resistant tuberculosis (MDRTB) and newly evolving strains with increase virulence and strong resistance to previous drugs. Consequently, the need to develop new and potent antituberculosis drugs is necessary now more than ever to counteract the increased resistance of TB to standard treatments. We now report on new compounds that may be appealing leads for development as new potential agents for therapy. New thioureas and benzals derived from pipercoline were prepared in good yields and purity using organic synthesis and are being tested for their activity against the causative agent of TB infection, *Mycobacterium tuberculosis*.

Preparation and Properties of Novel Antitubercular Compounds

Constance Ohlinger '12, Biochemistry

ADVISOR: *Michael Hearn, Chemistry*

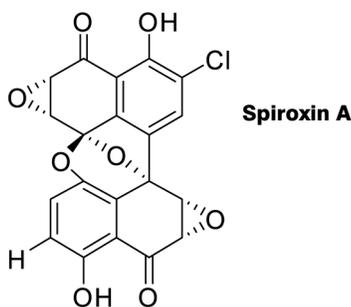
Affecting one third of the world's population, tuberculosis has begun to reemerge in industrialized countries to become a major threat to global health. With the formation of new strands of *M. tuberculosis* resistant to one or more of our front-line drugs, the development of new therapies is more important than ever. In this study, compounds subtly mimicking the structure of activated isoniazid, a widely used drug in tuberculosis treatment, were prepared as possible novel therapies, identified by their spectroscopic properties, and analyzed for antitubercular activity.

Progress Towards the Total Synthesis of the Promising Anticancer Natural Product Spiroxin A

Alice Kwan '11, Chemistry

ADVISOR: Dora Carrico-Moniz, Chemistry

Spiroxin A, a natural compound isolated from a marine fungus, has shown promising cytotoxicity against ovarian cancer cells. Ovarian cancer is a serious disease that affects about one in fifty-seven women in the U.S. each year and is the most common cause of death from gynecological cancer.¹ The goal of this study is to establish a novel synthetic methodology to obtain a key chiral intermediate en route to the total synthesis of the spiroxin A carbon framework. Progress towards validation of this methodology along with its subsequent application toward construction of the common spiroxin framework will be presented.



1. Fasching, P.A.; Gayther, P.; Pearce, L.; Schildkraut, J. M.; Goode, E.; Thiel, E.; Chenevix-Trench, G.; Chang-Claude, J.; Wang-Gohrke, S.; Ramus, S.; Pharoah, P.; Berchuck, A. *Mol. Oncol.* 2009, 3, 171–181.

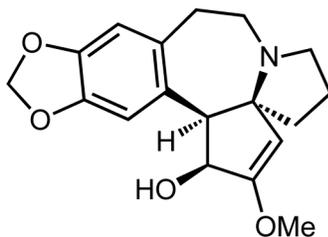
Nature and Synthesis: Allies Against Leukemia

Shoshana Bachman '12, Chemistry, and Linh Vu '11, Economics

ADVISOR: Dora Carrico-Moniz, Chemistry

(-)-Cephalotaxine is a naturally occurring compound isolated from *Cephalotaxus harringtonia*. Several of its naturally occurring esters have been found to possess activity against L-1210 and P-388 leukemia in mice.¹ Leukemia is a devastating disease that affects thousands of people annually in the United States. The total synthesis of (-)-cephalotaxine will provide a means to access the parent compound and allow the preparation of other structurally related analogues as potential antileukemic agents. Progress toward a novel enantioselective total synthesis of (-)-cepha-

lotaxine employing a new desymmetrization approach is presented.



(-)-Cephalotaxine

1. Newman, D.J.; Cragg, G. *Natural Products as Sources of New Drugs over the Last 25 Years*. *J. Nat. Prod.* 2007, 70, 461.

Genetic and Nutritional Influences on the Development of Schizophrenia

Lauren Eby '10, Neuroscience

ADVISORS: Joanne Berger-Sweeney, Biological Sciences and Office of the Dean of the College, and Laura Schaevitz, Biological Sciences

Schizophrenia (SZ) is a complex disorder that likely has both genetic and environmental etiology. We have developed a model of SZ using mice heterozygous for a mutation of the enzyme glutamate carboxypeptidase II (GCPII). To model genetic and environmental deficits, we deprived GCPII mice of the nutrient folate in adulthood. We have found that mice with either a GCPII mutation or folate deficiency display SZ-like symptoms; surprisingly, mice with both performed similarly to controls. In a second study, dams were folate-deprived prior to breeding and offspring were given a folate-deficient diet. Mice were tested on tasks relevant to symptoms of SZ. Four out of five control mice on the folate-deficient diet displayed severe physical abnormalities, whereas no folate-deprived GCP II heterozygous mice displayed these abnormalities. We are currently examining the effects of folate deficiency in the early postnatal period, attempting to model nutritional deficiency during the third trimester in humans. (Research supported by Wellesley College Faculty Awards.)

Synthesis and Properties of Antitubercular 1-(4-methylpiperazin-1-yl)thioureas

Tracy Y. Wang '10, Biochemistry

ADVISOR: Michael Hearn, Chemistry

Due to the increasing prevalence of drug resistant tuberculosis, there is a pressing need to develop more effective and potent antitubercular drugs. 1-(4-Methylpiperazin-1-yl)thioureas are of great interest as potential antitubercular drugs because they contain both thiosemicarbazide and piperazine chemical groups. As part of an ongoing investigation into the antitubercular properties of novel thioureas, the preparation and properties of 1-(4-methylpiperazin-1-yl)arylthioureas were examined. 1-(4-Methylpiperazin-1-yl)thioureas are prepared in the reaction of 1-amino-4-methylpiperazine with an aryl isothiocyanate usually in good yields and without byproducts. Success of reactions is easily evaluated using NMR and IR spectra due to distinguishing features of the resulting thiourea group. The ease of preparation and characterization of 1-(4-methylpiperazin-1-yl)thioureas makes this family of compounds especially convenient for the study and development of future antitubercular drugs.

Physical Science (poster session) Science Center Focus

Investigation of Spring Constants in Commercial Springs

Jessica Liao '11, Biological Sciences

ADVISOR: George Caplan, Physics

We encounter springs every day, when we sleep on a bed, when we write on a spiral-bound notebook, or when we look at a watch. Springs provide an extension or compression over a distance. They are commercially available, with many different spring constants (k). We verified Hooke's Law ($F = -kx$), and we measured the effective spring constant (k) for springs in series and for springs in parallel. We measured and calculated the change in length of springs, showing that springs hung in parallel follow $k_{\text{eff}} = k_1 + k_2 \dots k_n$ while springs hung in series follow $1/k_{\text{eff}} = 1/k_1 + 1/k_2 \dots 1/k_n$. We also found errors in the advertised 'k' values for some of the springs we used.

Students Talking about Astronomy Research (STAR)

Rhea Brown '12, Astronomy, and Deborah Tien '12, Astrophysics

ADVISOR: *Wendy Bauer, Astronomy*

Astronomers observe that late in their lifetimes, stars like our sun lose mass. By looking at spectral lines of binary star systems, we hope to better understand the process behind this mass loss. One of the stars shines through the mass lost by its companion, and the absorption of certain wavelengths of light can tell us about the makeup of the gas surrounding the mass-losing star. We are analyzing Hubble Space Telescope, Far Ultraviolet Spectroscopic Explorer, and International Ultraviolet Explorer data of three binary star systems: VV Cephei, KQ Puppis, and 31 Cygni, to study spatial structure in the stellar winds. (Research supported by the Massachusetts Space Grant Consortium.)

Environmental Geosciences Senior Thesis Panel (panel) Pendleton West 212

Emily Estes '10, Geosciences, Taylor Y. Harvey '10, Environmental Studies, Sarah Hurley '10, Geosciences, and Alejandra C. Ortiz '10, Geosciences

ADVISORS: *Brittina Argow, Geosciences, and Daniel Brabander, Geosciences*

Geosciences are an inherently interdisciplinary field. Current senior thesis research encompasses subjects from climate change and mine site remediation to salt marsh dike removal, monsoon evolution, and wave modeling. Though the techniques and topics differ, all seek to address an environmental issue by gaining a better understanding of earth systems.

The Role of Naturally Precipitated Hydrous Ferric Oxides in Metal Fate and Transport, Tar Creek Superfund Site, Oklahoma

Emily Estes '10, Geosciences

ADVISOR: *Daniel Brabander, Geosciences*

Concern over Pb, Zn, and Cd contamination downstream of the Tar Creek Superfund Site, a former mining district in Oklahoma, has prompted investigation into the role of hydrous ferric oxides (HFOs) in metal adsorption and transport. The two primary

metal sources to Tar Creek—seepage of groundwater from mines and run-off from mine waste piles—result in the formation of two distinct HFO types that mix with creek sediment to form a third composite type observed at downstream locations.

This project characterized the chemical and physical properties of each HFO type and quantified metal associations by mineral phase. Metal concentrations and Pb/Zn ratios decrease away from the source, suggesting that metal affinity for HFOs relates to sorption stability constants. Changes in HFO composition and morphology following mixing with creek sediment and deposition on downstream floodplains could affect the potential for metal remobilization. (Research supported by the Janina A. Longtine Fund for Summer Research in the Natural Sciences and a Dean's Office Research Grant.)

Sedimentological Parameters of the Herring River, Wellfleet, MA

Taylor Y. Harvey '10, Environmental Studies

ADVISOR: *Brittina Argow, Geosciences*

Located in Wellfleet, MA, the Chequesset Neck Dike was built in 1908–09 to convert 1,000 acres of salt marsh into agricultural land and to control mosquito populations. The diking of the Herring River had significant negative impacts on the estuarine environment. Cape Cod National Seashore managers have actively advocated for tidal restoration to the impacted estuary for over two decades. Now that a plan is finally underway, a major concern voiced by the local shellfishing industry is a possible change in mean sediment size as a result of the opening of the dike. Last summer I collected sediment samples throughout the estuary and subsequently analyzed their percent organic content, grain size, and composition. This information will be used to characterize the current sediment above and below the Dike as well as in Wellfleet Harbor and give managers metrics by which to evaluate potential changes in sediment source resulting from restoration. (Research supported by a CWS Summer Stipend and the Joshua A. Nickerson Conservation Fellowship.)

Evolution of the Indian Monsoon System over the Past 30 Myr – An Organic Proxy Approach

Sarah Hurley '10, Geosciences

ADVISOR: *Daniel Brabander, Geosciences*

The Asian monsoon is a critical component of global climate, and has far reaching impacts on human livelihood in one of the world's most densely populated regions.

Unraveling the monsoon response to 1) teleconnections between global climate systems and 2) tectonic forcing is essential to understanding monsoon circulation. The spatial and temporal evolution of the monsoon is examined through paleoclimate reconstruction reaching to the Oligocene (~30 Ma). A fundamental set of climatic and oceanic parameters including continental vegetation type, humidity, salinity, and sea-surface temperature are used to describe variations in monsoon circulation. Preliminary results show regional monsoon intensification associated with late Miocene environmental change and the expansion of C4 plants. (Research supported by NSF-OCE funding to the Ocean and Climate Change Institute, WHOI.)

Investigating the Effect of Wave Energy on Coastline Morphology and Beach Sedimentology Using Real and Modeled Wave Data

Alejandra C. Ortiz '10, Geosciences

ADVISOR: *Brittina Argow, Geosciences*

The project is the generation of a wave model of the pocket-beach system of Vieques, Puerto Rico. The Simulating Nearshore Waves (SWAN) modeling program creates the wave model. Data from NOAA generates the model. Real-time data collected from Vieques, Puerto Rico calibrates the wave model. Vieques formed as an island chain over a subduction zone. The diverse geology of the island includes igneous rocks, sand-rich limestones, and alluvial sediments. Sedimentary material is delivered to the coasts from weathering of upland rocks and coral reefs, forming a system dominated by pocket beaches and mangrove swamps along the southern shore, and moderately-connected beaches along the northern shore; however, the system is sand-starved. Wave energy drives sediment transport in the nearshore coastal zone and the beaches

should reflect changes in wave energy. The morphology and composition of the sediment of the different beaches around the island is considered with regards to wave energy. (Research supported by the Annabel Boyce James Fund for Research in the Sciences, Brachmann-Hoffman Grant, and a Dean's Office Research Grant.)

Social Analysis

The Universal Scapegoat: Three Case Studies of Antisemitism in the Western World (panel) Founders Hall 120

In HIST 328 we spent the fall semester investigating the context, manifestations, and persistence of antisemitism, defined as an irrational hatred towards Jews, their culture, religion, and/or race. Our projects explore the motivations behind the lynching of a Jewish man in Georgia, the systematic attempt to rationalize the removal of Jews from the planet, and the tolerance for a new/old stereotyping in present-day France.

Atlanta's Cry to "Hang the Jew!" and the Significance of Antisemitism in the Early Twentieth Century South

Julie Howe '10, History and Music
ADVISOR: *Frances Malino, Jewish Studies and History*

In Marietta, Georgia, in August 1915, a crowd of upstanding Atlanta citizens watched as Leo Max Frank hung dead from an oak tree. Frank had, in 1913, been convicted of the murder of thirteen-year-old Mary Phagan. Although his sentence had been commuted, many people in Atlanta were convinced of his guilt, and the crowd claimed that they were simply fulfilling the death sentence demanded by law. Leo Frank, in contrast to most victims of lynching in the South, was wealthy, educated, and white. He was also Jewish. Was Leo Frank a victim of antisemitism? My presentation will examine the possible motivations for the citizens of Atlanta to lynch a man who seemed, on the surface, to be their equal.

The Rodent: Nazi Imagery and its Ability to Control an Audience

Samantha Nidenberg '10, Jewish Studies and Teacher Education
ADVISOR: *Frances Malino, Jewish Studies and History*

In pre-Holocaust America, animals were anthropomorphized as lively, comedic, and entertaining. Characters like Oswald the Rabbit, Mickey and Minnie, the Cheshire cat and white rabbit from *Alice in Wonderland*, shaped America's perception of images of animals as charming and entertaining. Europe's view, on the other hand, took on a sinister, threatening and frightening role. The Third Reich created an effective propaganda campaign that became the lynchpin in persuading the community at large that an entire segment of its population needed to be isolated and exterminated. How could the Nazis have been so successful at defining the Jews as undesirable, equal to the vermin, synonymous with disease carrying rats? Why were the Nazis able to create that image in Germany, when they were not able to transform Mickey Mouse into a disease carrying, better off dead, Jew in America?

The Post-Holocaust Reintroduction of Antisemitism in France: A New Tolerance for Antisemitism

Marion Glickson '10, French and Jewish Studies
ADVISOR: *Frances Malino, Jewish Studies and History*

In 1967, President Charles De Gaulle announced a re-orientation of French foreign policy, elevating support for the Arab Middle East over France's prior role as Israel's main European ally. In 2006, Ilan Halimi, a twenty three-year-old French Jew of Moroccan descent, was kidnapped in Paris and tortured by a group known as the "gang of barbarians." This event could be seen as a consequence of France's conflicted relationship to its colonial history and to its immigrant populations. My presentation will discuss the possible connections between De Gaulle's speech and Halimi's murder, and will suggest an explanation of the new tolerance for antisemitism in French society.

Reading Elvis Presley & 1950s America (panel) Pendleton East 139

El Vez Lives!: Elvis Presley Tribute Artists Across Race and Gender

Rebecca Reeve '13 and Rachel Coogan '13
ADVISOR: *Elena Tajima Creef, Women's and Gender Studies*

From the beginning, Elvis Presley's style of "rock n' roll" caught both positive and negative attention. Some considered him revolutionary while others focused on his swaying hips and the detrimental effect they supposedly had on the moral health of the young generation to whom he catered. Either way, his music and performances had an irreversible effect on American music, an effect that would eventually trickle over the border into Mexico. El-Vez, the stage name for performer Robert Lopez, is commonly referred to as "The Mexican Elvis." Blending Elvis Presley's musical tracks with new and politically charged lyrics, Lopez has used Elvis's music to forward his own political and social agenda. Clearance Gibbens, an African American Elvis impersonator, also sings in tribute to the king. Though the majority of Elvis impersonators are male, some are female.

"It's been a Long Time, Baby": Reading Elvis Presley's 1968 "Comeback Special"

Ana Medrano Fernandez '13 and Carrie Shirley '13
ADVISOR: *Elena Tajima Creef, Women's and Gender Studies*

Elvis Presley has been called many things—clown, degenerate, hypocrite, good ol' boy, mamma's boy, copycat, the Second Coming—but on this everyone can agree: he was—and is—an icon. His career's longevity combined with his inexplicable charisma as a performer and his innovative musical style created a lasting impact on American culture. This is the retrospective view. He was not always seen so charitably. In fact, by his second decade on the scene he was widely considered a washed up "snarling darling." So when it was announced in 1968 that he would be putting on an NBC television special, the nation expected some useless anachronistic, base, cheap spectacle. What

they got was something else entirely. Many critics have called this special a turning point in Elvis's career.

**Containing the Feral Female:
Reducing Ann-Margret to Ribbons
and Sandwiches**

Marranda Major '13 and Lauren Woelfel '13
ADVISOR: *Elena Tajima Creef, Women's and
Gender Studies*

Viva Las Vegas (1964) has come to be known as one of Elvis Presley's best films. While the film offers a more engaged performance from Presley and a better soundtrack, the success of the film cannot be boiled down to him. His co-star, Ann-Margret, brought multiple dimensions to the usually flat formula of Elvis films. The chemistry between Elvis and Ann-Margret sizzles onscreen in *Viva Las Vegas*. The latter brought talent, ambition and life to their on (and off) screen love affair. Her performance in *Viva Las Vegas* provides ample material to dissect the representation of gender in this iconic Elvis film.

Cross-cultural Research

**Who the Heck Are You? A Study
of National Identity** (short talks)
Founders Hall 120

**Between Paris and Fort-de-France:
Colonial Medicine, Local
Healing, and Medical
Professionalization in Martinique**

*Carmel Scharf '10, Women's and Gender
Studies and French*

ADVISOR: *Susan Reverby, Women's and
Gender Studies*

Over 400 years, Martinique transformed from a slave-reliant colony to a fully equal French region. With colonization, the slave trade and the post-abolition immigration of Chinese and Indian workers, Martinique fostered the growth of a unique type of local medical practice. The valence in the contestation between local practices and the seeming scientific medicine and nursing practices of France shifted over time. Local Martinican and modern European medicines inevitably mixed, resulting in a hybrid more effective than either of the two were separately. The tension, mistrust, collaboration, and ultimate benefits of the interaction between the two types of medicine serve as an allegory for the rapport between France and Martinique. The two have been engaged in an uneven relationship of power: colonist and colonized, doctor and patient. Despite this imbalance they have united into a relatively stable and effective alliance, negotiating their differences and constructing a shared, trans-Atlantic identity.

**Revisiting the Roots of Southern
Italian Disparagement: Dispelling
Perpetuated Stereotypes**

*Catherine Maureen Marchetta '10, Biological
Sciences and Italian Studies*

ADVISOR: *David M. Ward, Italian Studies*

Principal events in Italian history, extending back as far as the *Rinascimento*, the *Risorgimento*, and the anti-fascist *Resistenza*, provide concrete examples of how the southern population has been largely excluded from participation in key historical movements before and after the formation of the nation. Continual isolation of southerners from integration with their northern counterparts has created an image of southern

Italians as second-class citizens. Examination of the “southern question” for my senior honors thesis will identify distinctive cultures, but will also illuminate many unifying features across the north/south gradient, dispelling some of the rooted stereotypes of southerners as “backward,” inferior, and barbaric peoples. (Research supported by the Office of the Dean of the College and the Amanda Aeschliman Gift.)

**Museums and the Changing
Nation: Negotiating Concepts of
Engagement and Diversity in
Museum Educational Programming**

Megan A. Goossen '10, Sociology and Spanish
ADVISOR: *Peggy Levitt, Sociology*

Art museums are sites for negotiating concepts of the global, the national, the community, and the self. In these institutions, ideas about who “we” are and how we should relate to the “other” are debated and negotiated. Yet as the nation changes, museums are challenged to attract and incorporate new visitors. My research analyzes how museum educational programming helps attract more diverse audiences. I look at three regional cases that illuminate differing approaches: Boston's Museum of Fine Arts, the Brooklyn Museum, and the Los Angeles County Museum of Art. Each museum is located in a city that is increasingly diverse and employs approaches to learning and audience building that reflect regional- and museum-specific attitudes toward diversity and community engagement. (Research supported by the Office of the Dean of the College.)

**Ancient Songs and Current
Constructions: The Use of Music
in the Ongoing Development of
Lithuanian Identity**

Emily D. Šaras '10, Anthropology and Music
ADVISOR: *Philip Kohl, Anthropology*

Lithuanians and non-Lithuanians alike have used *dainos* [ancient folk songs] to construct the idea of what it means to be ethnically Lithuanian. The performance of folk songs in times of occupation allowed Lithuanians to preserve their pride in their ethnicity, despite oppression. Since Lithuania's declaration of independence in 1991, the traditions of folk singing have been passed onto a new generation of Lithuanians who are reinterpreting the

cultural meaning of these songs. For eight weeks I conducted an ethnographic study of music-making in Vilnius, Lithuania during its European Capital of Culture festivities. My work contextualizes and analyzes my experiences in the field, demonstrating the critical, yet dynamic, role of folk song in the continual construction of Lithuanian identity. (Research supported by the Office of the Dean of the College, the Department of Russian Area Studies, the Department of Music, and through the Goldman Research Travel Grant from the Davis Center, Harvard University.)

Economic Issues

Health, Education, and Welfare

(short talks) Science Center 278

Trade Liberalization and Child Labor: Does Increase in Exports Decrease Child Labor?

Afia Tasneem '10, Economics

ADVISOR: *Kartini Shastry, Economics*

Many developing countries with high levels of child labor have undergone trade liberalization in the last three decades and it has often been prescribed as a means of decreasing poverty in the long run. Increase in high skilled exports increase returns to education and can influence parents to substitute child labor for schooling. However, if parents send their children to work out of necessity or poverty, they will be present-biased and expectations of future income may not affect child labor. In theory, increase in low skilled exports both raises household income and child wages with ambiguous effects on child labor. This paper empirically explores the impact of trade liberalization in India in the 1990s. The study uses variation in exports in the districts of India to see its effects on the incidence of child labor and the subcategories of child labor: salaried work, work in household enterprise, and domestic work.

Contraceptive Choices and Consequences in Bangladesh and India

Tejaswi Velayudhan '10, Economics

ADVISOR: *David L. Lindauer, Economics*

A striking feature of fertility control in India is that 67% of women using contraception are sterilized, 34% of whom were sterilized by the age of 25. In contrast, oral contraceptives are the most popular contraceptive method in the neighboring country of Bangladesh, where only 5% of married women of reproductive age opt for sterilization. Contraceptives have a two-fold purpose—to limit births and to delay births. As female sterilization is an irreversible procedure, it can only be used to limit births. For this reason one would expect women to use spacing mechanisms in addition to sterilization. But very few Indian women do. In my thesis, I explore the consequences of contraceptive method on the birth interval, which is the number of months between one birth and the next. The concern is that contraceptive choice may cause low birth intervals that then have adverse consequences for both mother and child.

Political Elites in Russia and the Effect of Their Background on Economic Outcomes

Natalia Kopyra '10, Economics

ADVISOR: *Olga Shurchkov, Economics*

Even though Russia transitioned to a democratic institutional system in 1991, old Communist institutions persist in some of its regions. These “shadow institutions” can have a significant effect on economic outcomes such as small businesses development, income inequality, and foreign direct investment. Using regional data for 1994–2006, I examine whether Russian regions run by old Communist elites have had lower levels of economic development than regions led by newcomers to the political arena. In the process, I create a brand new dataset on Russia’s geopolitics by investigating leader backgrounds before and after the transition including their affiliations with the Communist party and military organizations and their current abilities to exercise power over the region.

Environmental Issues

From Bees to Bio Fuels

(short talks) Pendleton West 117

Soil Inoculation: Investigating Measures to Improve Drought Resistance in Crops

Amisha Ahuja '12

ADVISORS: *Kristina Jones, Biological Sciences, and Alden Griffith, Botanic Gardens*

Among the many new burdens associated with climate change, droughts are increasing in many places around the world. Placed in light of our planet’s exponentially increasing population, scarcity of water has left farmers and legislators at a loss for how to feed unmatched numbers. More than ever, there is an urgent need to find ways to produce larger yields of vital cereal crops. My project investigates the effectiveness of inoculating soil with mycorrhizal fungi to increase drought tolerance of spring wheat, also taking salinity stress from irrigation into account. Wheat plants were grown from seed under greenhouse conditions; after applying water and salt stress on the plants, I observed their overall health and specifically measured photosynthetic rate, height, and root biomass. It is my goal that this experiment will be useful in addressing the critical agricultural concerns of developing nations.

Switchgrass and Climate Change

Jennifer Yang '12, Biological Sciences

ADVISORS: *Kristina Jones, Biological Sciences, and Alden Griffith, Botanic Gardens*

Panicum virgatum, or switchgrass, is a biofuel crop candidate for North America. Although switchgrass tolerates a wide range of environmental conditions, a recent study found that switchgrass yields vary with flooding and drought events. Drought events are becoming more frequent, according to regional climate models, and my research builds on this study to evaluate the factor of drought timing on switchgrass yields and growth. I conducted a greenhouse experiment to simulate the effect of early, mid- and late season drought periods on a common switchgrass cultivar, Cave-in-Rock, manipulating soil water potential to maintain drought-like conditions. I tracked various growth and development measurements from seedling and subsequent stages,

and my results include final biomass yields, root:shoot ratio, and phenological data. Understanding how switchgrass, known for its hardiness and high yields, responds to the factor of drought timing is particularly relevant for climate change and biofuel efforts.

Native Bee Emergence and Climate Change

Dominique Hazzard '12, Environmental Studies
ADVISORS: *Kristina Jones, Biological Sciences, and Alden Griffith, Botanic Gardens*

Bee populations worldwide are in crisis, most likely due to pesticide use, introduced diseases and parasites, loss of habitat, and climate change. While the decline of the commercially valuable *Apis mellifera*, or Western honeybee, has been the subject of much research, little is known about the health of most native bee populations. Native bees are an integral part of New England ecosystems; they increase the yield of commercial crops such as blueberries, and they are superior pollinators of native plants. By tracking the arrival of native bee species to the Wellesley College campus and analyzing the emergence cues, overwintering habits, and generalist or specialist nature of those species, this research investigates the impacts of climate change, particularly the early arrival of spring, on the emergence of native bees.

Literature and the Arts

“Two Masterpieces of the String Quartet Literature” (performance) Jewett Auditorium

Jenny Peng '10, English and Creative Writing, Belle Peng '13, Aileen Patimeteeporn '12, and Kathy Liu '13
ADVISOR: *Jan Pfeiffer, Music*

In our performance of Shostakovich's String Quartet in C minor and two movements of Dvorak's "American" String Quartet in F major, we hope that the listener will pick up on themes and motifs intended by the composers. Dmitri Shostakovich (1906–1975) employs musical melodies with his own signature (D. Sch), the notes D, E flat, C, and B, as a way of memorializing "the Victims of Fascism and War." Shostakovich simulates bombs dropping and the KGB

knocking in his quartet. Meanwhile, Antonin Dvorak (1841–1904) uses themes from African plantation songs and Native American music to inspire longing for a uniquely American folk melody. Come join us as we present our interpretation of these two landmark quartets.

Read and Sing for Your Supper (literary reading/short performance) Pendleton West 220

Our Mothers, Ourselves

Zoe Mungin '11, Psychology, and Katie Slezas '11, English
ADVISOR: *Adam Schwartz, Writing Program*

“To describe my mother would be to write about a hurricane in its perfect power.”—Maya Angelou

When the single parent of the household is imbalanced and angry it is impossible to be unaffected. This deeply personal literary reading from Katie and Zoe's creative nonfiction brings you into their childhood homes—homes tarnished with abandonment, poverty, racism, instability, and scalding love. Their stories strike a balance of unconditional love and disturbing, sometimes brutal, realities. At times comic, the histories grasp at the strange ways imbalanced mothers can love their children and how feverish, yet wary, the love comes back to them. With the distance that time has brought them, they explore what normal was living on the edges of madness, devotion, and destitute anger.

Thrift and Industry: Or, How to Sing for Your Supper

Claire Davis '10, English
ADVISORS: *Lawrence A. Rosenwald, English, and Luther T. Tyler, English*

This year, as a Creative Writing Thesis in the English department, I have been exploring contemporary American lyric at the crossroads of honky-tonk, gospel, and Sappho, commuting between New York and campus in order to find fresh pairs of ears on a nightly basis. My project will culminate in the production and public release of a full-length studio album of original tunes, a few highlights of which will be performed live at the Ruhlman conference with the help of a band assembled from Big Apple musicians. (Generously supported by the Pamela Daniels Fellowship.)

Making Sense of YouTube— Video Installation (exhibition) Pendleton East 339

Jessica Dill '10, Cinema and Media Studies
ADVISOR: *Wini Wood, Writing Program*

“Ours is a brand-new world of *all-at-once-ness*,” wrote Marshall McLuhan, referring to the modern Western world circa 40 years before the invention of YouTube. McLuhan also famously wrote, “The medium is the message.” What is the message when YouTube is the new medium? For my senior thesis, I have chosen to explore this question by sampling and remixing YouTube content into a re-presentation of a modern way of knowing—or, perhaps, of *not* knowing. YouTube defines a spaceless, timeless, virtual world in which chaos comes out empty, presence is distant, activity is passive, exposure is hiding, and the spectacle is always and inevitably a specter. With this video installation, I mean to articulate these paradoxes through an immersive, sensory experience of the ambiguous notions of sense, nonsense, and senselessness that define our *all-at-once* world of digital media.

Museum Education Practicum: Museum Mentors (panel) Davis Museum Lobby

Claire Thoma '10, French and Astronomy, Kelley Tialiou '10, Art History, Emma Curtis '12, Art History, and Miquel Geller '10, French and Studio Art
ADVISOR: *Alexa Miller, Curator of Education*

How can works of art impact student learning? How do different students approach a work of art in different ways? How can a museum most meaningfully serve its educational communities? Students from *Education 350: Museum Education Practicum: Museum Mentors* will share research projects on the Davis Museum's student visitors, ranging from the elementary-level to college students. They will also reflect upon the practice of teaching in the galleries as a form of learning about student audiences.

Science and Technology

Taking the Molecular Census (short talks) Pendleton West 212

Island Hopping and Habitat Choices in the Galápagos

Weixia Guo '11, *Biological Sciences*, Julia Wucherpfennig '12, *Biological Sciences*, and Christina Tran '11, *Biological Sciences*
ADVISOR: Andrea Sequeira, *Biological Sciences*

We are studying the colonization history and mechanisms of species formation in endemic flightless Tenebrionid beetles in the Galápagos Islands. The reconstruction of the evolutionary history of this genus will enable evaluation of the relative contributions of independent colonization—"island hopping"—versus ecological processes—"habitat choice"—to species diversity in this archipelago. Additionally, comparison of the potential evolutionary histories derived from DNA sequences with diverse inheritance patterns will allow assessment of species boundaries and permeability to gene flow. With that aim, we have compiled a multiple-gene dataset comprising mitochondrial, multi-copy nuclear genes and sequences from anonymous loci developed specifically for this study. This investigation of the diversification patterns in *Stomion* allows relevant comparisons with well-documented patterns in other endemic systems studied in the laboratory, further elucidating the mechanism of colonization and speciation in island archipelagos.

Do Introduced Populations Displace Endemic Close Relatives? Determining Invasiveness of *Galapaganus howdenae* Weevils in Galápagos Archipelago

Hoi-Fei Mok '10, *Biological Chemistry*
ADVISOR: Andrea Sequeira, *Biological Sciences*

Invasive species are a major threat to biodiversity and oceanic island systems such as the Galápagos are particularly threatened by introductions of exotic species. Population genetics can determine invasive potential of recently introduced populations through evaluation of the remaining genetic variation and heterozygosity. This study focuses on the winged *Galapaganus howdenae*, a weevil species recently introduced to Santa Cruz Island in Galápagos. Because microsatellite

DNA loci, regions of hypervariable repeats, are highly variable co-dominant neutral genetic markers, they are particularly powerful tools for this type of study. Genotyping of multiple individuals across various loci and localities will allow detection of demographic expansion and genetic diversity retention. Results of this study will not only identify these introduced populations' invasive potential, but could also provide guidance concerning steps needed to prevent further expansion into native habitats and contribute to the conservation of Galápagos' biodiversity. (Research supported by the National Science Foundation.)

Threatened Habitats in the Galápagos Archipelago

Austin Stuckert '10, *Biological Sciences*
ADVISOR: Andrea Sequeira, *Biological Sciences*

Unless immediately deterred, the processes of ecological change currently underway in the Galápagos archipelago may lead to the loss of populations, extinction of species and disruption of evolutionary processes and ecosystems. Although a number of forces contribute to ecological change, habitat destruction and fragmentation marks the greatest threat to both species and habitat diversity. Loss of habitat connectivity results in reduced migration rates, causing remnant populations to become isolated and susceptible to extinction. This project will study patterns of genetic variability of weevil populations across volcanoes in the island of Isabela in the Galápagos. The signals of habitat fragmentation due to indiscriminate goat grazing would demonstrate more severe effects on the population genetic architecture in Northern than Southern Isabela. This could be one of the first demonstrations of habitat fragmentation using molecular data.

Prasinophytae Phylogenetic Characterization along a Transect from Monterey Bay to Oligotrophic Waters

Harriet Alexander Skoning '10,
Biological Sciences
ADVISORS: Martina Königer, *Biological Sciences*, and Alexandra Worden, *Monterey Bay Aquarium Research Institute*

The contribution of the diverse group of single-celled eukaryotes within the 'pico' size fraction (cell diameter < 2µm) to primary

production has been shown to be greater than their numerical abundance would indicate, rivaling production by their cyanobacterial counterparts. We explored the phylogenetic diversity of marine picoeukaryotes, with an emphasis on the subphyla Prasinophytae, in different marine biomes using small subunit (SSU) rRNA clone libraries generated from samples collected along an ecological gradient in the Monterey Bay. Clone libraries were comprised of both prokaryotic and plastid-encoded 16S as well as 18S rRNA genes. The eukaryotic SSU sequences (i.e. plastid- and nuclear-encoded) were aligned and then manually curated to create a custom ARB database. The SSU sequence alignments generated in this study are now being used to taxonomically bin environmental 454-TAG sequences using a fast and accurate phylogenetic placement method, which provides the potential for more efficient surveys of marine eukaryotes.

The Most Attractive Lab at Wellesley: Probing Biomedical Problems with Magnetic Resonance (panel) Science Center 104

Tracking Cells from the Blood to the Brain: Using MRI and SPIOs to Trace HSC Migration in *Procambarus clarkii*

Adriane Otopalik '11, *Neuroscience*
ADVISORS: Nancy H. Kolodny, *Chemistry*, and Barbara S. Beltz, *Neuroscience*

Neurogenesis, the birth of new brain cells, occurs throughout adult life in organisms ranging from the humble fruit fly to the more complex human. In the brain of the crayfish *Procambarus clarkii*, our lab has identified a neurogenic niche, or a cluster of neural precursor cells, that serves as a hub for the development and migration of new neurons. However, because all cells in the niche appear to be migrating to their final destination in the brain, it remains a question how the niche is replenished with new precursor cells. Our current hypothesis suggests that hematopoietic stem cells (HSCs) are migrating from the bloodstream to the niche via a vascular cavity. Our goal is to develop a non-invasive protocol to track the migration of HSCs from the blood to the brain using superparamagnetic iron oxide particles (SPIOs) as a contrast agent and magnetic resonance imaging

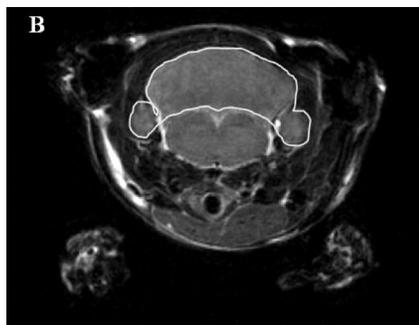
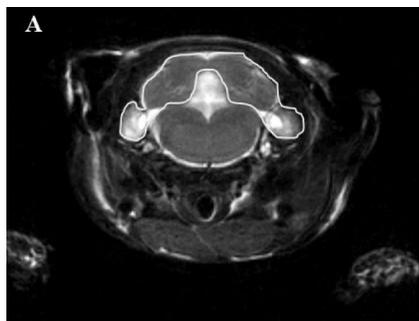
(MRI). (Funded by the Arnold and Mabel Beckman Foundation Scholars Program.)

NEUR/BISC 306 Lab Development: Applying the Techniques of MRI and Environmental Enrichment to Visualize Cerebellar Degeneration

Stephanie Huang '12

ADVISORS: Nancy H. Kolodny, Chemistry, and Carol Ann Paul, Neuroscience

Lurcher (*Lc/+*) transgenic mice exhibit ataxia, or loss of motor coordination, due to massive loss of cells in the cerebellum. Environmental enrichment, such as access to toys, is a therapeutic protocol used to increase sensory stimuli. Enrichment studies performed on Lurcher mice have shown that exposure to an enriched environment improves motor coordination. Because Lurcher mice exhibit ataxia due to neurodegeneration, we hypothesize that exposure to enrichment would possibly slow or decrease the degenerative processes that occur in the Lurcher and alter brain morphology. Students taking NEUR/BISC 306 will explore the effects of environmental enrichment by designing and implementing their own enrichment set-ups and applying the techniques of MRI to better understand the mechanisms of cerebellar development and function. (Research supported by the Howard Hughes Medical Institute Curriculum Development Grant.)



Postnatal Day 21 MR images of a (A) Lurcher mutant mouse and a (B) Wild-type mouse. Cerebellum outlined.

All-in-one Multifunctional Nanovehicle for Cancer Therapy

Sherry S. Zhou '10, Biochemistry,

Hatice G. Yayla '11, Chemistry, and Jasmine Rana '12, Chemistry

ADVISORS: Nancy H. Kolodny, Chemistry, Nolan T. Flynn, Chemistry, and Andrew C. Webb, Biological Sciences

Pancreatic cancer is a highly aggressive yet rare malignancy with a 5-year survival rate of only 1–4% with no effective therapies. Our goal is to create a multi-purpose nanovehicle for targeted pancreatic cancer therapy. Poly(ethylene glycol) (PEG)-functionalized, gold-coated iron oxide nanoparticles (Fe_xO_y -Au NP) were synthesized as precursors to an antibody-conjugated vehicle for imaging and delivery of therapeutics. A gold shell was coupled to the superparamagnetic iron oxide particles (5 nm). The Fe_xO_y -Au NPs were characterized using transmission electron micrographs (TEM), UV-Visible spectroscopy, dynamic light scattering (DLS) and T2*-weighted magnetic resonance imaging (MRI) relaxivity studies. To further functionalize the nanovehicle, methods to couple a binding agent, Avidin, to PEG have also been developed. The Avidin-PEG conjugated product was analyzed by various techniques. MRI will be used to track the biodistribution of the nanovehicle and whether it preferentially targets xenograft tumors *in vivo*. (Research supported by Merck/AAAS, Howard Hughes Medical Institute, and BellSouth AT&T.)

Using Magnetic Resonance Techniques to Characterize Brain Structure and Metabolic Activity in Schizophrenia

Yih-Chieh S. Chen '10, Chemistry and

French, Weiya Mu '11, Chemistry, and Jasmine Rana '12, Chemistry

ADVISOR: Nancy H. Kolodny, Chemistry

Schizophrenia is a psychiatric disorder that affects about 1.1% of the adult U.S. population. Glutamate carboxypeptidase (GCPII) deficient mice exhibit several of the symptoms of schizophrenia and contain a genetic mutation that results in

decreased levels of GCPII, an enzyme that hydrolyzes N-acetyl-aspartate glutamate into N-acetyl-aspartate (NAA) and glutamate (glu). We thus hypothesize that the mutant mice will have lower levels of glutamate than wild-type mice. The non-invasive techniques of magnetic resonance spectroscopy and imaging (MRS and MRI) yield useful results in neurochemical studies of GCPII mice. Chemical analysis using MRS both *in vivo* and *ex vivo* focuses on the levels of NAA, glu, and glutamine in the brain. In addition, brain structure volumes were examined using MRI. By determining concentrations of these metabolites in the brain as well as structural characteristics, differences between wild type and mutant mice were investigated. (Research supported by Merck/AAAS, Sherman-Fairchild, and BellSouth AT&T.)

Small Particles with Big Impacts: Applications of Nanotechnology

(panel) Pendleton East 239

Cassandra Duarte '12, Biological Chemistry,

Zabra Ghadyali '12, Middle Eastern

Studies, Olivia Hendricks '12, Chemistry,

Christine Min '10, Chemistry, and Madeline

Vara '10, Chemistry

ADVISOR: Nolan T. Flynn, Chemistry

Nanometer-sized metal particles possess unique properties that make them useful in myriad settings from information storage to biomedical treatment. Despite these potential uses, many properties of nanoparticles are poorly understood. Here, we report on a range of properties and applications for these materials. These include fundamental studies such as investigating the stability of nanoparticle thin films and controlling the assembly of nanoparticles in solution. Two specific applications, developing nanovehicles for biomedical applications and for remediation of contaminated water, will also be described. (Research supported by Office of the Dean of the College and the Sherman Fairchild Foundation.)

Social Analysis

Sociolinguistic Projects: What We Think About the Words We Use (panel) Science Center 396

Doctors' Gendered Speech Directives: Theorizing and Understanding Women's Language and Politeness

Lauren Cabillane '12, Cognitive and Linguistic Sciences

ADVISOR: *Andrea Levitt, French*

Women in leadership positions today are expected to balance the “masculinity” of authority with contradicting definitions of femininity, and this balancing act often takes place on a linguistic battleground. Basing my work on research conducted by Candice West, I use the example of a family doctor as an authority figure to explore the value of women's style of communication in the public sphere. I asked survey participants to respond to doctors' directives that reflected either feminine or masculine styles of speech. My project led me to explore the different ways women and men speak and use politeness as well as ideas about how we should theorize gender and language.

Examining Language Attitudes of Young Adult Bilinguals

Darcy Kupferschmidt '12, Japanese Language and Literature

ADVISOR: *Andrea Levitt, French*

Schools such as Wellesley are known for their diverse student populations. One of the greatest benefits of this culturally rich community is the multilingualism that flourishes on campus. International students contribute largely to the list of languages spoken between students, while American students bring a different bilingual background to school. Does this difference change their attitudes or the linguistic aspects of their future? In a sociolinguistic study, young international and domestic bilingual college students responded to a survey that examined their language experience, learning processes, usage, and skill. These results were used to measure attitudes about being bilingual leading to some surprising but pleasant discoveries.

Am I Getting Old or Are You Being Sarcastic?

Casey Sedlack '11, Environmental Studies

ADVISOR: *Andrea Levitt, French*

Sarcastic humor is popular with the young, who sometimes find that their jokes are misunderstood by older individuals. This study was designed to examine how well adults (over 40) and young adults (between the ages of 18–25) detect the use of sarcasm in casual conversation. A survey, which contained questions on participants' background and use of sarcasm and five brief dialogs that were evaluated for sarcasm, was conducted to explore this question. Responses were collected from over 30 participants. The results reveal some interesting patterns that link the detection of sarcasm to age differences. They also provide some insight as to why we think we're funny, but many of our parents tend to think otherwise.

Taboo Words in Music and Lyrics

Anne Tuan '12, Cognitive and Linguistic Sciences and Economics

ADVISOR: *Andrea Levitt, French*

What does Plato have in common with millions of concerned parents? Both have targeted popular culture as a source for deviance in young people. Nowadays music in particular is put under constant scrutiny for its questionable lyrics, violent undertones, and sexual themes. Is there something about hearing taboo words in music that renders them more acceptable than when they are read? In my experiment, I surveyed people's reactions to certain taboo words. I examined how offended they were when the word was read and when it was accompanied by music. This presentation will reveal my findings as well as some tidbits about swearing in the college community.

Women on the Move (short talks) Pendleton East 139

What is the Gender of a Successful Scientist? Stereotypes about Women and Scientists

Laila Alawa '12, Biological Sciences and Psychology, Bebe Zhao '10, Economics and Psychology, and Elaine Y. Kim '10, Spanish and Psychology

ADVISOR: *Linda L. Carli, Psychology*

Relatively few women choose science majors or careers in science, and women who do work in male-dominated fields, such as science, continue to hit that infamous glass ceiling, hindering them in their attempts to advance in their careers. While more women than ever before have entered into science fields, the presence of gender related stereotypes may still be widespread and problematic. In our study, we investigated whether people associate masculine traits more than feminine traits with a successful scientist. We collected data from various campus locations around Boston to ensure a representative sample of subjects.

Non-performance Factors in the Evaluation of Male and Female Leaders

Laura Murphy '10, Psychology

ADVISOR: *Linda L. Carli, Psychology*

When organizations evaluate employees, they base their evaluation on performance factors—like how good the employee is at his or her job or how much revenue the employee brings into the firm—and on non-performance factors—like race and gender—which are based on stereotypes. Past research has shown a tendency to evaluate female leaders more negatively than male leaders, especially under circumstances where a masculine leadership styles is utilized or when the female leader occupies a role that is traditionally male-dominated. My research uses meta-analysis, a statistical method that reviews past studies on a subject, to evaluate the extent to which these factors, and many others, impact the evaluation of males and females in leadership positions. (Research supported by the Office of the Dean of the College and the Psychology Department.)

Expectations for Relationships among College Aged Women: Do our Parent's Relationships Shape Our Own?

Caroline Phillips '10, Sociology

ADVISOR: *Joe Swingle, Sociology*

The average age of marriage continues to rise and the divorce rate in America remains just below 50%. Yet, why these trends continue or what people of marriageable age think about these phenomena remains under explored. In my thesis I study college-aged women and their expectations for their

future relationships. My working hypothesis has been that children of divorce, regardless of their socioeconomic background, are more likely to have polarized expectations regarding their relationships: they are more likely to be completely commitment-averse or commitment-demanding; they are more likely to have thought about divorce in their futures (either as a definite occurrence or a complete impossibility); they are less likely to believe in “the one” (i.e., a soul mate); and they are more likely to expect a partner to break off a relationship unless they are shown complete and absolute devotion. Early analysis of focus group data with 29 women—10 whose parents are divorcee, 10 who identify their parents as happily married, and 9 who identify their parents as unhappily married—reveals that women whose parents are unhappily married or divorced have more clearly defined future plans and are more pessimistic about eventually finding someone with whom they can spend their entire lives. They also tend to be more aware of their parent’s relationships and see their parents as an example for their own relationships. Simultaneously, many appear resigned to future relationships that will resemble those of their parents in some aspects. I conclude with an examination of the implications of my findings and what they may portend for the future of marriage in the U.S.

Personality, Self, and Relationship Attitudes

Colette Whitaker '10, Psychology and Computer Science

ADVISOR: *Julie Norem, Psychology*

For the psychology research methods course, 312R, students designed and ran studies in the field of personality psychology. This study examines positive illusions in relationships between romantic partners and close friends, as well as the relationship between illusions and other relationship variables. The “love-is-blind” bias is the primary construct of interest; this is an illusion in which individuals perceive their romantic partners to be more attractive than them. A sample of 141 women estimated their own, their romantic partner’s, and a close friend’s physical attractiveness. Participants also completed measures of relationship satisfaction and love styles. Results provided support for the love-is-blind bias and a positive illusion in friendships,

in that individuals consistently rated their partners more positively themselves, and their close friends more attractive than average. Results also show a positive correlation between the love-is-bias and the love styles, Eros (romantic love) and Agape (selfless love).

Consuming Issues (short talks) Pendleton West 116

Louis Vuitton Purses, Godiva Chocolates, and Housekeepers: An Examination of Luxury in the Great Recession

Rachel Behler '10, Sociology

ADVISOR: *Bryan S. Turner, Sociology*

In my senior honors thesis, I am researching how luxury marketing and consumption have changed in the current recession. My current work utilizes a mixed methods design, analyzing both quantitative economic models and qualitative data generated from interviews. I posit that to fully comprehend why changes in luxury consumption have occurred, it is necessary to understand the social impetus that has triggered them. I am also investigating the marketing strategies luxury brands have employed to keep their limited customers buying. This includes an investigation of how larger luxury conglomerates, like Moët Hennessy Louis Vuitton (LVMH), reconcile their financial losses with their traditional ethos of exclusivity.

Gender Differences in the Association between Childhood Obesity and Behavior Problems in a Pre-K Sample

Becky Parker '10, Psychology

ADVISOR: *Wendy Wagner Robeson, Ed.D., Wellesley Centers for Women*

Childhood obesity rates in the U.S. are remarkably high. While physical health problems related to obesity need much attention, there are psychosocial problems that can severely impact a person’s quality of life as well. Research indicates that women more frequently than men experience low status attainment and depressive symptoms as a result of weight-related stigmatization and social marginalization. When and why does this gender difference in psychosocial problems arise? Because patterns in behavioral problems associated with childhood obesity are emerging at very young ages, it is

important that research and intervention focus not only on adolescents but also children in preschool. My research addresses some of the gender differences in overweight children, the behavioral problems that may lead to increased social marginalization, and the frequency of these behavior problems in young boys and girls. (Research supported by the Anne Murray Ladd Research Internship at the Wellesley Centers for Women.)

How Much Do You Trust Your Neighbor?: Determinants of Social Capital in Honduras

Nandita Krishnaswamy '12, Economics and Mathematics

ADVISOR: *Patrick J. McEwan, Economics*

A large amount of literature in the fields of sociology and economics has analyzed the causes and consequences of great amounts of social capital. Social capital is usually defined as the existence and strength of links between and within social networks in a community. This project will analyze data collected for 1660 households in rural Honduras, focusing on variables that proxy social capital, including responses to questions about trust, group participation, networking, and community involvement. I will estimate statistical models using Stata software to test hypotheses about how individual and family characteristics such as income and education levels of adults in the household contribute to social capital in the rural Honduran context. This will provide us with a framework for how social capital can be developed in the most efficient way in such an environment.

Cross-cultural Research

Mothers, Sex, and Self-esteem (short talks) Pendleton West 116

Saying What I Think: The Association between Authenticity in Relationships and a History of Child Maltreatment Among College Women

Sohyun Han '10, Psychology
ADVISOR: *Sally Theran, Psychology*

Women of all ages have been found to suppress their authentic thoughts and feelings in order to maintain good relationships. In my research, I predict that college women will demonstrate lower levels of authenticity if they have a history of child maltreatment. I also predict that authenticity will partially account for the negative outcomes that develop from child maltreatment, including depression, low self-esteem, and trauma symptomatology. Furthermore, I propose that Asian American women will exhibit worse outcomes compared to other ethnic groups as a result of the greater prevalence of child maltreatment and self-silencing among Asian Americans.

Mother-Daughter Dyads: From Cultural Discontinuities to Shared Perspectives

Claudia Hernandez '10, Psychology
ADVISOR: *Nancy Genero, Psychology*

In the U.S., Latina adolescents often face problems of acculturation, that is, adaptation to two cultures simultaneously. In addition to typical developmental challenges, they must integrate into mainstream American culture while maintaining a connection to their parents' traditional ethnic values. Clinicians and researchers have begun to document the negative outcomes associated with acculturative stress as well as the beneficial effects of mutual relationships on family functioning and self-esteem. This presentation summarizes the findings of my thesis research on the association between the shared understanding of cultural knowledge within the mother-daughter relationship and indicators of psychological well-being in a sample of 92 Latina adolescents. Results suggest that mother-daughter cultural inter-subjectivity and mutuality predict positive psychological outcomes. In addition, I will

discuss how these outcomes vary by mode of acculturation.

The Final Solution? Gender Specific Programming for "At-risk" Latina Girls

Alaya Levi Salley '10, Peace and Justice Studies
ADVISOR: *Charlene Galarneau, Women's and Gender Studies*

Following a 1992 recommendation from the Office of Juvenile Justice and Delinquency Prevention, gender-specific programming was championed as the golden solution to reducing at-risk behavior in young girls. Youth organizations across the country adopted this framework acknowledging that girls' development is unique from boys and furthermore that specific intervention is necessary to promote healthy adolescence. In fall 2009, I researched this phenomenon both through a literature review and interviews with two Latina community based organizations in Boston. These organizations incorporate Latina cultural values such as *familismo* and *collectivismo* into the gender-specific model to encourage positive identity formation and deter risky behavior in girls ages eleven to seventeen. I examined how the program content aims to reduce the risk of pregnancy, low high school graduation rate, and suicide/depression in Latina youth. I also questioned how the lack of adequate program evaluation impacts the long-term success of behavioral risk aversion.

Wanting to Be Wanted: What Characterizes Women Who Seek to Boost Self-esteem through Sex?

Rachel Amrhein '10, Psychology
ADVISOR: *Jonathan Cheek, Psychology*

From expression of love to obtaining a promotion, women are motivated to have sex for many different reasons. This study focuses on exploring women who have sex in order to elevate their self-esteem. Although engaging in self-esteem-boosting sex is culturally viewed as an inferior and negative reason to have intercourse, this study proposes that maybe it's not all bad. I will first explore different types of goal orientation in relation to reasons for having sex, predicting that validation seekers will be more likely to engage in self-esteem sex. Then, I will attempt to verify whether having sex in order to boost

self-esteem is actually a negative behavior or whether healthy validation seekers can benefit from self-esteem sex. I will do this by demonstrating that there is variation in psychological health within validation seekers and that there are psychologically healthy validation seekers who productively engage in self-esteem boosting sex. (Research supported by the Office of the Dean of the College and the Psychology Department.)

Gazing through a Lens/ Reflecting through a Screen (short talks) Pendleton East 339

French Masculinity Reflected in Film: Examining Truffaut's Antoine Doinel Character

Elizabeth Shirey '10, Political Science and French

ADVISOR: *Scott Gunther, French*

When considering the topic of gender in film, certain images of women come to mind: Brigitte Bardot's untamed attraction, or Katharine Hepburn's stinging wit. However, the complex social constructions behind male protagonists are under-studied. In my thesis for the French department, I seek to unravel assumptions regarding masculinity by focusing on a particular set of films by director François Truffaut. Spanning 20 years and featuring the same actors, these films center around one character, Antoine Doinel, as he struggles through life's major events. Doinel both challenges and reinforces the traditions of marriage, fatherhood, and work generally expected of Frenchmen, and reformulates the public's understanding of masculinity in the process. (Research supported by the Nathalie Buchet Ritchey Fellowship and the Office of the Dean of the College.)

Godzilla: Postwar Attitudes and the Realities of Nuclear Warfare

Rebecca Fiske '10, East Asian Studies
ADVISOR: *Eve Zimmerman, East Asian Languages and Literatures*

Not long after its release in 1954, the film *Gojira* soon became an international sensation and its star a pop culture icon. At its heart, *Gojira* is far more than a simplistic tale of a destructive monster rampaging Tokyo. The film reveals Japanese postwar attitudes towards nuclear warfare and the Cold War as a whole. *Gojira* is a criticism of nuclear

proliferation and the treatment of victims of nuclear warfare and testing. It is a stirring tale of nationalism and bravery, a return to a time in which Japan was untainted by the burdens of defeat and guilt. The Japan presented in the film is how the Japanese wished to envision their nation—as a noble country that is governed by an unfaltering moral compass and a willingness to make great sacrifices for the greater good.

Exposing the Invisible Primary: Examining the Media's Role in Determining Candidate Viability

Lisa Geraci '10, Political Science

ADVISOR: *Marion Just, Political Science*

Certain presidential candidates are perceived as frontrunners months before the first presidential primary contests take place. Long before voters cast their ballots, the media lavishes coverage on some candidates while perceiving others as being virtually dead in the water. The disparity among candidates' media coverage was perhaps no more apparent than in 2008. Why did Hillary Clinton receive more coverage than other qualified candidates like Joe Biden or Bill Richardson? In the eyes of editors and journalists, what determines candidate viability? To what extent has the growth of new media, like blogs, YouTube and *The Daily Show*, influenced this process? By directly surveying those responsible for shaping and publishing coverage of the presidential primaries, this project seeks to measure the importance of a candidate's personal and political characteristics in the media's perception of candidate viability. (Research supported by the Barnette Miller Fund.)

Journalism and Online Social Networks: New Ways to Access, Share, and Discuss the News

Rebecca Spitzer '10, Media Arts and Sciences

ADVISOR: *Panagiotis T. Metaxas, Computer Science*

What do you consider to be “news?” Where do you find it—in a newspaper, on television, or on Facebook? Do you feel like you have to search out the news, or does it come to you? Drawing from a survey of Wellesley students, I will discuss a new pattern of modern news consumption, as influenced by the ubiquity of Internet access and popularity of social

media. Social networks like Facebook and Twitter provide a new model for accessing, sharing, and discussing news, and I will explore how they facilitate a greater and more meaningful democratic conversation about current events.

Literature and the Arts

The Scholar Sings (performance) Jewett Auditorium

Margaret Zwiebach '12, Nicola Collett '10,

Medieval/Renaissance Studies, May-Elise

Martinsen '12, Music, Josephine

Ho '12, Theater and Political Science,

Marina Heinrich '12, Japanese Language

and Literature, Clara Kahng '13, Lucy

Bergin '12, Music and German, and Esther

Hugenberger '10, French

ADVISOR: *Andrea M. Matthews, Music*

Does a better understanding of the evolution and history of opera directly influence singers and consequently, their performances? With the assistance of their non-singing colleagues, four students from the fall semester course *MUS230 Opera: Its History, Music, and Drama* will perform four arias and a duet to demonstrate how their newfound knowledge of opera has changed their performance of this genre of music. For example, one of the singers chose her piece through her personal connection with a character. Another chose music that reflects a period or style that she found most interesting. Witness the depth of these performances and discover for yourself the importance of understanding the history and drama of opera.

Political Development

Why Am I Here? Why Are You Here? (short talks) Science Center 278

Reclamation: Dokdo's Significance to Korea

Denai Koh '10, East Asian Studies and Economics

ADVISOR: *Yoshihisa T. Matsusaka, History*

Since the dark era of Japanese colonial rule between 1910 and 1945, ties between Korea and Japan have significantly improved. Nevertheless, their bilateral relations are still plagued with hidden scars of the past, ridden with a violent and antagonistic history. One of the unresolved issues is a territorial dispute over the Dokdo islands, which are a tiny group of rocks located in between Korea and Japan that seem to be of no obvious strategic or economic importance. The dispute, however, has been for over half a century and a solution still does not seem in sight—both governments are adamant about their positions, and the Korean public, in particular, is more passionate than ever about claiming the islands. Why do these islands hold such significance for the Korean people and their government? A seemingly unimportant territorial dispute actually holds a multitude of meanings for the divided nation.

First Contact, First Nations

Jessica Allan '10, History

ADVISOR: *Kate Grandjean, History*

While much American scholarship focuses on contact with Native Americans through English, French and Spanish explorers and settlers, contact was achieved in a very different idiom through the contact of Norse explorers to Maritime Canada. This presentation will offer fresh perspective on approaching early American exploration, colonization, and co-existence. A truly multidisciplinary perspective is used, encompassing linguistics (analysis of Old Norse sagas), archaeology (the excavation of L'Anse-aux-Méduses in Newfoundland), anthropology (the examination of Inuit culture), cartography and geography (tracing features described in the sagas to known geographic features of the Maritimes), engineering (the capability of the Vikings to navigate these waters five

centuries before Columbus) and economics (the continuing trade that the Grönlendinga maintained with the Inuits).

The Curse of Black Gold: Learning from Environmental Conflict in Indonesia and Nigeria

Beverly Mbu '10, Political Science

ADVISOR: *Craig Murphy, Political Science*

In 1956 the first oil well was found in the Niger Delta region of Nigeria, igniting a cycle of environmental degradation, financial wealth, and astronomical corruption that continues to affect those living in the Niger Delta today. Halfway across the world, similar events unfolded in the region of Aceh, the heart of Indonesian crude oil production and yet one of the poorest districts in the nation. Today, after decades of violent warfare, the people of Aceh live in peace with growing economic opportunities while the Niger Delta peoples continue to suffer. What can be learned from the Aceh road map to peace, and how does it apply in the context of Nigeria? (Research supported by the Barnette Miller Fund.)

Water Wars?: Hegemony and International Rivers

Alexandra Stark '10, International Relations–Political Science

ADVISOR: *Craig Murphy, Political Science*

“Water wars” are much talked about, yet the fact that there has never been a “water war” implies that the politics of international rivers is more complicated. The Jordan River is a highly contested international river, yet Israel has been able to dictate other riparians’ access to its water without using military intervention. I will explore this dynamic using the framework of “hydro-hegemony,” showing that Israel has used ideational power to maintain its preferential access to this resource. I will contrast this case with the Nile River, where cooperation amongst riparians has dramatically increased, and the Columbia River, where the U.S. and Canada have long cooperated. I will show how differences in a hydro-hegemon’s relative power in a river basin affect the fairness, and therefore sustainability, of cooperation, and how future “water wars” can be prevented. (Research supported by the Political Science department and the Barnette Miller Fund.)

War and Peace (short talks) Pendleton West 117

U.S. Foreign Policy towards Afghanistan: Thirty Years of (Dis) Engagement

Maria Lisiakova '10, International Relations–Political Science

ADVISOR: *Stacie Goddard, Political Science*

British Prime Minister Lord Palmerstone once exclaimed that Britain has no permanent friends, only permanent interests. For centuries, analyses of states’ foreign policies as well as theories of international relations have relied on national interests as the guidelines for the creation of a long-term coherent foreign policy. Yet, what happens to the practice of international relations and its theories if we start questioning the role of national interests? Using declassified primary sources from The National Security Archive, this research uncovers U.S. foreign policies towards Afghanistan in 1973–2008 and shows that U.S. foreign policy in Afghanistan has not been guided by U.S. national interests. Rather, U.S. foreign policies have been merely reactive and the process of their implementation led to the formulation of U.S. national interest. Thereby, this presentation refutes the common perception of the United States as an active and purposeful player in international relations and offers an alternative idea. (Research supported by the Barnette Miller Fund.)

Minzu Tuanjie: The Policies Governing China’s Multiethnic Frontier

Cynthia Chen '10, Political Science

ADVISOR: *William A. Joseph, Political Science*

It is common knowledge that the multiethnic nature of China’s frontier autonomous regions—particularly Xinjiang and Tibet—makes Chinese sovereignty over these areas highly problematic. The well-publicized recent histories of unrest and protest in these areas make it clear that the Chinese Communist Party faces great difficulties when formulating policies intended to achieve their goal of promoting national unity. At first glance, the CCP appears to voice a strong commitment to promoting equality and providing for a degree of regional political autonomy. A close examination, however, of the policies the CCP has used to manage

Xinjiang, Tibet, and Inner Mongolia makes it clear that all is not as it seems when it comes to the Chinese state’s rhetoric and their actual policies towards these historically minority-dominated areas. (Research supported by the Barnette Miller Fund.)

Complement or Supplement? The Evolving Relationship between the EU and NATO

Nora Keller '10, Political Science

ADVISOR: *Robert Paarlberg, Political Science*

My thesis explores the following question: Has Europe conformed to United States demands in regards to the European Union Security and Defense Policy (ESDP)? In 1998, when the ESDP was formally announced, former Secretary of State Madeleine K. Albright asked that the EU not decouple itself from NATO, not duplicate its capabilities, and not discriminate against non-EU NATO members in its decision-making. I am using these so-called “three Ds” to assess whether different international relations theories can explain European behavior. By doing so, I hope to gain insights into the direction of European-American efforts at security and defense cooperation as well as the future role and purpose of NATO.

The Use of Force to Mitigate Human Suffering: The United Nations and Humanitarian Intervention throughout the 1990s

Danielle Brown '10, Political Science and Spanish

ADVISOR: *Stacie Goddard, Political Science*

As intrastate conflicts developed throughout the 1990s the United Nations was increasingly called upon to intervene in order to alleviate human suffering. At the beginning of the decade the UN answered this call with increased zeal, eager to define its role in the new world order. Large-scale humanitarian crises had always existed, but with the end of the Cold War and the U.S.-Soviet deadlock in the Security Council, the UN saw its opportunity to finally play a more dominant role in the international arena. However, as the decade progressed the UN became less willing to intervene, leaving some crises unattended while acting to prevent others. Join me on a journey through the 1990s as I examine various experiments in intervention

and the factors that influenced the UN's decisions to intervene in humanitarian crises throughout the decade. (Research supported by the Barnette Miller Fund.)

Science and Technology

Rounding Out the Picture:

3D Facial Analysis (panel)

Pendleton West 212

Use of 3-D Landmark Data in Analysis of Human Facial Variation

Calais Weber '11, Biological Sciences and Anthropology, Julie Bass '12, Anthropology, and Kirstie Moreno '12

ADVISOR: *Adam Van Arsdale, Anthropology*

Humans observe faces and facial variation differently. One challenge in understanding this observation is limitations imposed by the use of categorical assessments of human facial variation. Here we develop a morphometric protocol for assessing the morphological differences between high-resolution 3-D scans of human faces. Rather than treating faces categorically, this approach considers human faces as complex geometric landscapes—consisting of landmarks, pseudo-landmarks and semi-landmarks—that differ in size and shape. By quantifying the size and shape differences present between any two 3-D facial scans, it is possible to more systematically assess not just whether two faces are different but how different they are and in what ways they are different. This in turn allows for greater interrogation of what kinds of differences subjects observe when they examine the human face.

Assessing Accuracy in High-resolution 3-D Facial Scans

Feride Aydinoglu '12, Kyla Brown '12, Psychology, and Priscilla Gutierrez '13

ADVISOR: *Adam Van Arsdale, Anthropology*

The development of readily available laser scanning technology has allowed for increased utility of 3-D data in a variety of disciplines and applications. Here we develop and assess the accuracy of a protocol for acquiring rapid, high-resolution 3-D facial data from human subjects using a NextEngine scanning platform. Our goal was to develop a protocol that was minimally invasive but also highly

accurate. Subjects were scanned from three angles—front, right, and left oblique—at a moderate resolution level relative to the capabilities of the scanning platform. The three-fold scan minimized the presence of “holes” in the data associated facial topography. The moderate resolution level (220 points/in.²) allows for a rapid scan time (<40 seconds) appropriate for living subjects. To establish accuracy, intra-observer (the person processing the scan) and inter-observer error was assessed both within and between subjects (the person being scanned).

Social Analysis

Identities, Surfaces, and Social Institutions (short talks)

Pendleton East 139

Lesbian is Normal: (Re)Educational Activism in Japan

Xiao Tian '10, East Asian Studies

ADVISOR: *Ellen Widmer, East Asian Languages and Literatures*

Japanese society is built around a strict adherence to the ideal of normality: school, work, marriage and family. Lesbianism is considered a lifestyle choice that is deviant from the norm and thus is rendered invisible by a widespread social silencing. The first woman to publicly come out, Hiroko Kakefuda, challenged the community to “reclaim the word ‘lesbian’” and assert their space in society. In response to her challenge, lesbian activists within the last decade have taken an education-focused approach in their pursuit of social acceptance. They are amending the standard for what is normal to be inclusive of lesbian individuals through redefining of terminology, creating new images of the lesbian experience, and drawing on reestablished institutions to promote an ‘ideal Japan.’ By adopting the rhetoric of ‘normality’ to legitimize the lesbian experience, lesbian activists are changing the notion of sexuality in Japan. (Research supported by the East Asian Studies department.)

Are Consensual Searches Really Consensual?

Shan Shan Tam '10, Philosophy and Architecture

ADVISOR: *Mary Kate McGowan, Philosophy*

Suppose a police officer pulls over a driver and asks, “Can I look inside your trunk?” Although the officer's question is a request that can be refused, I argue that there are compelling reasons to believe that drivers often interpret such questions as orders that must be obeyed. Moreover, I argue that when drivers take such an utterance to be an order, the driver's affirmative response does not constitute consent, and thus the subsequent search by the police officer is unconstitutional. I also explore the possibility that there are racial and socioeconomic injustices involved and I critically evaluate several potential solutions to this problem.

Goals, Close Relationships, and the Self

Krista Olson '11, Psychology

ADVISOR: *Julie Norem, Psychology*

How important are significant others to our goals? Relationships with romantic others and close friends have been shown to impact how an individual views themselves, others, and the environment. Close others have also been shown to impact goal pursuits positively and negatively. This presentation will discuss my study on the relationships among goals, close relationships, and relational identity orientation. For this study, college undergraduates and faculty completed five questionnaires that measured how much romantic others and close friends helped or influenced goals, the importance of achievement goals, relationship closeness, and the subjective importance of social relationships. Understanding the importance of close friends and romantic partners in our lives can help us gain a fuller picture of how this aspect of the self is impacted by interpersonal relations. This presentation will further discuss the constructs mentioned above and the results of the study.

Ethnic Differences in Body Evaluation and Preference for Plastic Surgery

Rachel So '10, Psychology

ADVISOR: *Paul Wink, Psychology*

Research on body image of women around the world has focused on eating disorders thus obscuring other possible cultural differences in body esteem. In particular, the adoption of Western cultural standards may result in disturbance of body image among Asian women because of physical disparities between them and their white counterparts. We investigated differences in satisfaction with ethnically salient body features among Euro, Chinese, and Korean American college women. In addition to investigating ethnic variability in body image, we ascertained whether these differences were related to the use of plastic surgery, ethnic identification, individualism/collectivism, and social class. (Research supported by the Office of the Dean of the College and the Department of Psychology.)

Holy Affairs: Religion in Society (short talks) Science Center 396

The Heavenly Hootenanny and Other Changes to the Catholic Church from Vatican II

Abigail Friedman '10, American Studies and Peace and Justice Studies

ADVISOR: *Sharon Elkins, Religion*

Beginning on the First Sunday in Advent in 1964, the Catholic Mass underwent a transformation from the traditional, sacred Latin to what some would call the “heavenly hootenanny.” In addition to the most obvious changes in the Mass, Vatican II brought about many other changes in the Catholic Church. Lay people were expected to take an active role in the Church rather than being passive recipients of the sacraments; sacramentals, religious devotions, and even some saints were no longer considered as integral. These changes greatly impacted Catholics and their beliefs. I will discuss what I learned through my independent study in the religion department about these changes, as set out by Vatican II and as interpreted by various segments of the Church, and consider their impact on Catholics and the Catholic Church.

The Elusive Fourth R: Religion in the Secondary School Social Studies Curriculum

Kate Soules '10, Sociology

ADVISOR: *Ed Silver, Religion*

During the twentieth century, in tandem with an overall trend toward secularization in American society, religion lost its place in the public school curriculum. Today, in the face of significant conflicts around the world based on clashes between religious ideologies, American high schools no longer teach basic facts about the world's religions. State curriculum standards typically do not address religion and pressure often falls on individual teachers to determine how to incorporate religion into their lessons. In the absence of official curriculum standards, when such instruction takes place, it is ad hoc and often dependent on teachers' informal knowledge of religious pluralism. Surveying both public and private high school teachers, I will explore how teachers are prepared to teach religion and how they actually present it in the classroom. Understanding the condition of instruction about religion in the secondary school classroom is the first step towards imagining a more balanced curriculum.

Becoming More Buddhist over Time: An Analysis of the Ambedkar Conversion Movement in India

Claire Droste '10, Religion and Sociology

ADVISOR: *Neelima Shukla-Bhatt, South Asia Studies*

The Ambedkar conversion movement, which began in 1956, has seen generations of Hindu Untouchables convert to Buddhism. Drawing upon interviews conducted in the converted community over two research trips to Nagpur, India, I have examined the evolution of the Ambedkar Buddhist movement as a process that is characterized by stages of change over time. In my research, I have observed the ways in which conversion is an ongoing process through the converts' acceptance of the Triratna, or Three Jewels—the Buddha, Dhamma (teachings of the Buddha), and Sangha (Buddhist community). Following the common understanding that taking refuge in the Triratna officially makes one “Buddhist,” I explore how the level of acceptance influences a convert's growing sense of identity as Buddhist. I also explore

how the converts both rely on and reject their prior identity as Hindus at different stages, thus carving a new identity from the dynamics of multiple religious identities.

Go Blue!

(short talks) Pendleton East 239

Path to (Em)Power: The Politics and Purpose of Wellesley College

Katherine Chanpong '10, Political Science and Economics

ADVISOR: *Roxanne Euben, Political Science*

As a women's college, Wellesley is seen as a shining example of women's power and progress. It is implicitly feminist with its “women who will” mission statement. Yet on many levels Wellesley straddles the fence as a feminist institution, exhibiting various models of inclusion and exclusion. In political theory, the dominant understanding of power is “power over,” in which domination and control are key. Feminist political theorists argue an alternative definition of power: “power to.” Drawing on these two theories of dominant and feminist expressions of power, I will discuss the power dynamics of various Wellesley students, faculty, and staff and attempt to analyze the extent to which Wellesley perpetuates and challenges the dominant understanding of power today.

Factors Influencing College Transition and Sense of Belonging in Latina/o Students

Evgenia “Zhenya” Karelina '10, Sociology and Spanish

ADVISOR: *Joe Swingle, Sociology*

For incoming undergraduates, college represents an important but often challenging transition. Students go through a period of adjustment as they acquire new skills and knowledge necessary for navigating the academic and social landscapes of the campus. Researchers have found that initial experiences on the first year strongly contribute to a long term “sense of belonging” and success in college (Hurtado & Carter 1997). However, studies also reveal that for many Latino/a students, the transition to college is especially difficult. In my senior thesis, I analyze first and second year interviews with 60 students participating in a longitudinal study of the Class of 2010. I focus my attention on the transition experiences of Latino/a and White

students. I specifically explore how students' relationships with faculty, friends, and family affect the college transition process. My study will potentially illuminate how colleges can best intervene to help students overcome pre-college disadvantages and achieve more positive academic and social outcomes.

Alumni Giving: Altruism or Self-interest?

Caitlin Kearns '10, Economics

ADVISOR: *Patrick J. McEwan, Economics*

A number of researchers have examined the determinants of alumni donations, many motivated by concern for the financial stability of higher education institutions. In contrast, Meer and Rosen (2009) marry a study of altruistic giving with higher education finance, using institutional data to disentangle the relative importance of selfishness and altruism as determinants of alumni giving. The research presented here addresses the same question asked by Meer and Rosen: whether donations to one's alma mater are motivated by altruistic factors or by the desire to increase children's probability of admission. Data from a single-sex institution, however, provides a natural control group, allowing the same estimation to be made more precisely and with less risk of endogeneity. Using giving data from Wellesley College, we find evidence that donations by Wellesley alumnae are indeed tied to the college admissions timeline.

A "Shakespeare Sisterhood": Gender and Authority in Women's Shakespeare Study at Wellesley and Beyond

Sarah Vickery '10, History and English

ADVISOR: *William E. Cain, English*

The name and writings of Shakespeare carry with them considerable power. From the late eighteenth century on, women have appropriated his cultural authority to give credence to their otherwise unconventional roles as scholars, critics, and public performers, asserting a uniquely female intuitive and emotional connection to the Bard. This gendered approach allowed them to enter into competition with their male counterparts and to raise serious social and political questions; however, it sometimes came dangerously close to reaffirming the essentialist stereotypes that limited women's power and authority in the real world. Wellesley College, from its founding a remarkable community of female Shakespeare scholars, soon became a site of tension between essentialism and experimentation as the students of the Shakespeare Society clashed with professors and administrators over the extent and nature of its dramatic performances, in which young women adopted male dress and manners.