

Humanities

Chinese Today: Near and Afar
(panel discussion) Founders Hall 126

Sophia S. Chen '13, East Asian Studies, Wendy M. Foo '14, Economics, Virginia Hung '13, Mathematics, Kelsey A. Ridge '13, English and East Asian Studies, Christianne L. Wolfson '13, Chinese Language & Literature, Audrey M. Wozniak '14, Music, Ji Qing Wu '15 Economics and Cognitive & Linguistic Sciences
ADVISOR: *Shiao Wei Tham, East Asian Languages & Literatures*

This panel discusses research topics that students in CHIN 231/331 pursued as part of the study of the linguistic, historical, cultural, and sociopolitical factors that shape our understanding of what constitutes the Chinese language. The course examined the various language families in China in terms of writing systems, phonetics, word and sentence structure, how and why these languages have changed, and the ongoing changes that are taking place in them.

We report on linguistic trends in Chinese language use online as a result of censorship, gender in the Chinese language, the use of Mandarin in Asian-American cinema, linguistic fieldwork on the Hakka dialect, and Chinese as a foreign language in the U.S. In all, our reports concern the past, present, and future of the Chinese language from a global standpoint and how it influences and affects our daily lives.

Controversial Public Art and Its Politics

(panel discussion) Jewett Arts Center 450

A Text-Based Monument: How Roy Moore Manipulated Memory and Identity in His Ten Commandments Monument

Katherine E. Dresdner '13, Art History
ADVISOR: *Patricia Berman, Art*

Chief Justice Roy Moore chose to display his Ten Commandments monument in the public rotunda of the Alabama State Supreme Court building. The monument and its location in the state courthouse on July 31, 2001 ignited a national firestorm and resulted in constitutional litigation in the Federal courts. This case study examines the artist's use of public art to reconstruct one of the most fundamental tenets in American law – the separation of church and state. Key issues in this original interdisciplinary analysis are

the artist's manipulation of memory and of identity through the use of texts engraved.

Problems of Place: Judenplatz Memorial in Vienna

Cassandra Tavolarella '13, Architecture
ADVISOR: *Patricia Berman, Art*

The Judenplatz Memorial in Vienna, built by Rachel Whiteread, is a contested monument to the memory of the Holocaust. Built on top of the ruins of a Jewish synagogue that was destroyed in the 15th century, the "Nameless Library" interrogates the collective memory and accessibility of Jewish history. The "Nameless Library" is situated in the Jewish quarter of Vienna, and is the only Holocaust memorial in Austria. Similar to a concrete bunker or mausoleum and lined with outward facing books, the "Nameless Library" dedicates itself to the anonymous victims, loss of culture, and knowledge.

Whose King? A Case Study on the Martin Luther King, Jr. National Memorial

Caitlin Greenhill Caldera '14, Art History and Studio Art
ADVISOR: *Patricia Berman, Art*

A dream deferred twenty-seven years, the Martin Luther King, Jr. National Memorial on Washington, D.C.'s National Mall was finally erected by the MLK Memorial Foundation to commemorate the legacy of MLK, Jr. in 2011. Due to multiple government and corporate interventions, budgetary problems, and the MLK memorial foundation's own foolish search for a 'universal' MLK, the memorial is not the realization of a dream but the execution of a colossal and controversial nightmare: a soviet-style social realist propaganda sculpture of superfluously enormous proportions that conveys the opposite of King's ideologies.

Vigeland Park: A Study of Its Symbols

Diana Huynh '15, Art History and Political Science

ADVISOR: *Patricia Berman, Art*

The Vigeland Park (1924-1949) in Oslo, Norway, named after its creator, Gustav Vigeland, is known as a national emblem – a monument representative of Norwegian culture. In this case study, I question its role as a national public space by focusing on the controversies surrounding Vigeland and his commission. Despite it being remarkably

entrenched to the cultural identity of Norway, unwrapping the fabrics of public policy and cultural history, design processes and artistic choices, reveals that the symbols of the park is more contested than it appears to the local and international audience.

You Can't Evict an Idea: The Giant of Boston and the Spaces of Subversion in Public Art

Laura Marin '13, Art History
ADVISOR: *Patricia Berman, Art*

The recent mural painted by the Brazilian street artists Os Gemeos in Dewey Square represents a major shift in the public art of Boston as well as a crucial juncture in the collective memory surrounding the site claimed by the Occupy movement less than a year before the mural's execution. The artists enjoyed the support and blessing of the City of Boston and several cultural and municipal organizations to paint what becomes, upon closer inspection, a rather subversive image. My paper seeks to explore how the potentially radical implications of the Os Gemeos mural play out in a project validated and legitimized by the city's cultural and municipal authorities. I will contextualize the artists' strategies within a wider Brazilian modernist strategy of cultural cannibalism as a tool to subvert Western hegemony and explore how this approach has carried on into our globalized present.

Science & Technology

Breaking Bad: Drugs, Delivery, and Disease

(short talks) Pendleton Hall East 139

Two Methods of Synthesizing Novel Thiocarbonyl Agents for Drug-Resistant Mycobacterium Tuberculosis

Alexa Jackson '13, Economics and Chemistry, Amelia S. Williams '13, History

ADVISOR: *Michael Hearn, Chemistry*

Each year, approximately 9 million new cases of tuberculosis are identified across the globe, predominantly in developing and emerging nations. [1]Even more concerning is the growing proportion of these cases caused by drug-resistant strains. In the extreme, a few patients have recently been diagnosed with strains of tuberculosis that are completely unresponsive to currently-available drug therapy, heightening the urgency of developing new pharmaceuticals

effective against drug-resistant strains. The thiocarbonyl moiety, present in several resistant strain therapies, is hypothesized to produce tuberculostatic activity. We endeavor to incorporate a thiocarbonyl into new tuberculostatic compounds via the thioamide or thiourea functional group. Alkyl-substituted thioamides were produced from substituted benzaldehydes and aromatic amines via a modified Willgerodt-Kindler reaction. Diphenyl thioureas were synthesized by nucleophilic attack of aniline derivatives on the electrophilic carbon of aryl isothiocyanates. Both series were synthesized in good yield and purity and show promising preliminary biological results (Funded by the Department of Chemistry and Howard Hughes Medical Institute).

[1] “WHO Report 2011: Global Tuberculosis Control.” World Health Organization. World Health Organization, 2011. Web. September 2012.

The Synthesis and Evaluation of Residues 6-36 of Alpha-Synuclein

Madelyn P. Kallman '13, Chemistry and Mathematics

ADVISOR: *Julia Miwa, Chemistry*

Parkinson's disease is linked to the neuro-protein alpha-synuclein. Several factors, including certain gene mutations, will cause the protein to aggregate to neurotoxic oligomers, which damage and kill neurons. One of these mutations, A30P, causes an altered secondary structure from the wild type protein that enhances oligomerization. To characterize this structural shift, we focus on the region of the protein surrounding the mutation; we synthesized wild type and mutant fragments of alpha-synuclein containing residues 6-36, and examined their conformations using circular dichroism spectroscopy. With this work, we hope to understand further why alpha-synuclein aggregates and how to control or inhibit aggregation.

Tackling a Silent Disease: Determining Best Practices for Management of Childhood Stroke

Hayley E. Malkin '13, Biological Chemistry

ADVISOR: *Mala Radhakrishnan, Chemistry*

Pediatric stroke is a leading cause of mortality and disability among children, yet few comprehensive studies focused on best practices for acute management have been conducted.

A stroke is defined as death of tissue, and can be caused by a variety of mechanisms including excessive blood clotting and hemorrhage. With an adviser from Boston Children's Hospital and Wellesley College, I have been tackling this question from a clinical perspective. My project aims to determine the safety and efficacy of drug treatments in treatment of childhood stroke events. Data was collected retrospectively and systematically from patients referred to the Cerebrovascular Disorders and Stroke program at Boston Children's Hospital for disease consultation and management. Our preliminary results corroborate those of previous studies, indicating that there are nuanced differences in outcome between three standard treatment strategies. These findings represent a step towards comprehensive categorization of safety and efficacy of treatments for childhood stroke.

Progress Towards the Synthesis of a Novel Electroactive Compound for Surface Modification of Gold Nanoparticles

Nicole A. Spiegelman '13, Chemistry, Hong Zhang '15, Undeclared

ADVISOR: *Dora Carrico-Moniz, Chemistry*

In recent years, scientific research has placed an emphasis on the nanoscale. Gold nanoparticles (AuNPs) are extremely small gold particles with a diameter on the scale of nanometers that have myriad applications in medicine, biosensing, and electronics.

Recently, there has been an increased interest in developing methods aimed at linking two distinct AuNP populations. The Flynn lab is developing a novel electrochemical method to trigger the self-assembly of AuNPs. To maximize the use of electrochemistry, the AuNP populations should exhibit water-solubility. The Carrico-Moniz lab is working towards the synthesis of a novel thiolated compound that will be attached to AuNPs. This organic molecule incorporates several ethylene glycol units, which should enhance the water solubility of the respective AuNPs. The progress towards the synthesis of this novel sulfur-containing electroactive compound will be presented. (Research in collaboration with Professor Nolan Flynn, Chemistry, and supported by a Roberta Day Staley and Karl A. Staley Fund for Cancer-Related Research Award and a Eleanor R Webster Prize in Chemistry).

High Impact Science on the Final Frontier

(short talks) Science Center 104

Simple Impact Crater Morphometry: Distribution and Analysis of Martian Craters

Lynn M. Geiger '13, Geosciences and Astronomy

ADVISOR: *Wesley Watters, Astronomy*

Impact craters, which are caused by meteorites, are the most widespread geological feature in the solar system, found everywhere, from planets to asteroids. On Earth, the atmosphere is too thick for smaller craters to form, so we have to look elsewhere to study them. With the implementation of new high-resolution stereo cameras in orbit around Mars, studying small craters is now possible. The focus of my research is taking these new data and finding impact craters to study simple crater shape distribution. My research combines morphometry statistics with physical data, to better understand how the underlying geology and surface environment of an impact site affects crater formation, crater morphology and the evolution of craters over time.

Circular Polarization and Incident Wavelength Independence in the Fresnel Rhomb

Wanyi Li '16, Undeclared, Renee Lu '15, English

ADVISOR: *Theodore Ducas, Physics*

Circularly polarized light has many applications ranging from investigations of atomic energy levels, minerals and biological materials to 3-D movies. In this presentation we will consider two methods of circularly polarizing light – using a quarter wave plate or a Fresnel rhomb – that depend on two very different physical mechanisms. We will describe the optical physics underlying each of these methods and present experimental results. Our work demonstrates the greater versatility of the Fresnel rhomb in its ability to operate over a significantly greater range of wavelengths than a quarter wave plate.

Optimizing Exoplanet Transit Observations and Analysis

Kirsten N. Blancato '15, Astrophysics, and Anna V. Payne '15, Undeclared

ADVISOR: *Kim McLeod, Astronomy*

We optimized exoplanet transit observing and analysis techniques with the 24” telescope at Wellesley College and developed a Python-

based pipeline to fit the resulting light curves. We observed nine transit events and used the model fits to determine the physical properties of the star, the planet, and the planet's orbit. Our best observations (on stars with $m = 10 - 13$) yielded mmag residuals and formal uncertainties on the transit midpoints of less than 1.5 minutes. With the machinery that we built, we can now undertake simultaneous observations with collaborators at other colleges to quantify the uncertainties in transit timing variations. (Sources in support of this project included Massachusetts Space Grant and Claudine Malone '63 Summer Science Research Scholars Gift for our funding.)

Re-defining the Birdbrain: Investigations of Learning and Memory in Songbirds
(panel discussion) Founders Hall 120

Andrea J. Bae '14 Neuroscience, Napim Chirathivat '15, Undeclared, Houda G. Khaled '16, Undeclared, Sima Lotfi '13, Neuroscience and Philosophy, Ana K. Ortiz '14, German Studies, Milena Radoman '15 Undeclared, Sahitya C. Raja '15, Undeclared
ADVISOR: *Sharon Gobes, Neuroscience*

To adaptively interact with their environment, animals need to have the capacity to learn and acquire a memory of how they changed their behavior. Although the behavioral components of learning and memory have been well characterized, the neuronal changes that accompany such behaviors are less understood. Songbirds are a unique model system for the investigation of learning and memory in the brain because they provide a natural learning paradigm that is expressed under laboratory conditions. Male, juvenile songbirds learn their songs from a conspecific tutor during a 'sensitive period,' and the strength of this learning can be measured after the learning process has been completed. Because of similarities at the behavioral level between song learning and speech learning, the songbird is also a particularly good model for speech acquisition in humans. In the Gobes Lab, we investigate the cellular and synaptic changes that occur during song learning in both wakefulness and sleep through behavioral, immunocytochemical, and electron microscopy techniques. Sources of funding:

Brachman Hoffman Fund
Patterson Summer Research Fellowship
Howard Hughes Medical Institute Summer Research Awards

Sparkly Hats and Cookie Dough: Stories from Computer Security
(panel discussion) Science Center 278

Erin Davis '15 Computer Science, Emily Erdman '13, Neuroscience and Computer Science, Taili Feng '13, Computer Science, Michelle N. Ferreira '13, Computer Science, Margaret T. Ligon '13, Computer Science
ADVISOR: *Franklyn Turbak, Computer Science*

This fall, we took CS 342, Computer Security. As part of that course, we competed in a Capture the Flag competition, in which we had a computer with secrets on it, and we had to defend our secrets while stealing secrets from other teams. We also did significant final projects, investigating topics ranging from the security of Wordpress, to creating security frameworks, to drive-by downloads, to the security of CS student projects. We will discuss these projects and their broader implications.

The Role of Low Energy Electrons in High Energy Radiolysis
(panel discussion) Science Center 396

Sebiha M. Abdullahi '15, Biological Chemistry, Mavis D. Boamah '14, Chemistry and Mathematics, Nathalie Rivas '15, Biological Chemistry, Katherine E. Shulenberger '14, Chemistry, Audrey A. Tran '15 Undeclared, Katherine D. Tran '15, Undeclared
ADVISOR: *Christopher Arumainayagam, Chemistry*

Our goal is to simulate processes that occur when high-energy cosmic rays interact with interstellar and cometary ices. The interactions of high-energy radiation, such as cosmic rays, with matter produce large numbers of low-energy secondary electrons, which are thought to initiate radiolysis reactions in the condensed phase. In addition to building a new ultrahigh vacuum chamber optimized for astrochemical studies, we are investigating the low-energy electron-induced condensed phase reactions of methanol (CH₃OH), ammonia (NH₃), and water (H₂O). The results of experiments such as ours may provide a fundamental understanding of how complex molecules are synthesized in the interstellar medium and comets.

"Change the World": Projects from Predictions Paradigms and Joules (PPJ) an Experimental Olin/Wellesley Transdisciplinary Course
(panel discussion) Science Center 277

Ellen M. Bechtel '14, Environmental Studies, Trevor Hooton '14, Engineering (Olin), Jared Kirschner '13, Electrical and Computer Engineering (Olin), Emily L. Kurtz '15, Mathematics, Larissa Little '14, Engineering (Olin), Celeste Maisel '14, Mechanical Engineering (Olin), Julia A. O'Donnell '15, Physics, David Pudlo '15 Engineering (Olin), and Slater Victoroff '15, Engineering (Olin)
ADVISORS: *Daniel Brabander, Geosciences and Robert Martello, History of Science and Technology (Olin)*

Last semester Professors Rob Martello (History of Science and Technology, Olin College) and Dan Brabander (Geosciences and Environmental Studies) offered a new course called Paradigms, Predictions and Joules: A Historical and Scientific Approach to Energy and the Environment (PPJ). This transdisciplinary course prioritized developing a transferable set of tools and attitudes (ranging from quantitative modeling to ethics) applicable to sustainability studies. In order to foster these outcomes, the professors created an open-ended "Change the World" assignment that encouraged strong personal (intrinsic) motivation and produced tangible impacts that extended course themes beyond the walls of the classroom. Following an in-class brainstorming session, teams of students self-organized and often chose to contribute their skills and efforts to more than one project. In this session, PPJ students will share their class presentations from the Change the World deliverables.

Social Sciences

Political Action: Taking Charge for a Better Tomorrow
(short talks) Pendleton Hall West 212
Community-Based Learning: A Tool for Social Change

Jiezhen Wu '13, Peace & Justice Studies and Political Science
ADVISOR: *Kenneth Hawes, Education*

This presentation is based on my honors thesis research, through which I explored the importance of community-based learning and its role in building stronger schools and better students.

I propose that education should go further and deeper than the statistics of test scores, towards creating a holistic environment where every student, teacher, parent, and community has a stake in the schooling experience, and becomes actively involved and committed to education and learning as a whole. In using case studies and data from the field work I have done in both the United States and Singapore, I aim to create a dialogue between what I have seen and experienced in the field with what is being discussed in the greater academic literature, to deepen the understanding of the salience of community-based learning in education.

Practical Laboratories and Unfulfilled Dreams: A Comparative History of Urban Planning in Japan and Its Colonies

Lin Davina Huang '13, International Relations- History

ADVISOR: *Yoshihisa Matsusaka, History*

My presentation explores Japan's urban planning projects in the metropole and in its colonies of Hokkaido, Taiwan, Korea and Manchuria. By comparing the extent and nature of urban transformation in the homeland and its colonies, I argue that colonial cities in the Japanese empire experienced much more radical transformations. The colonies provided a vacant plane on which Japanese urban planners tested avant-garde planning concepts and engineered magnificent, high-modernist imperial designs. In other words, they became the practical laboratories and testing grounds for urban planners to fulfill their unfulfilled dreams in Japan.

Elimination or Integration: An Ethnography and Analysis of Decriminalization of Sex Work in Kigali, Rwanda

Julia A. Klaips '14, Biological Chemistry

ADVISOR: *Rosanna Hertz, Women's and Gender Studies*

In the context of post-genocide reconstruction, the Rwandan government has made immense strides forwards in the context of healthcare provision, especially in the field of HIV prevention. However, one community of Rwandans remains at particularly high risk: women who work in the sex industry. Given broad expert consensus on the policies best suited to deal with this problem, investigation into the social, political, and legal problems of providing effective treatment to this at-risk group can be, we hope, fruitful. Where best

medical practice clashes with social mores, what challenges face policymakers, and to what extent can, or should, solutions be provided by non-governmental organizations? A situation of the epidemiological statistics within the context of the everyday experiences of healthcare providers and service users provides insight into the ongoing challenges and the need to tailor international advice to fit local circumstances.

On the International Stage: U.S. Foreign Policy and Its Actors (short talks) Pendleton Hall East 239

The Military: Personal Narratives of Veterans

Kathryn E. Kenney '13, Anthropology

ADVISOR: *Deborah Matzner, Anthropology*

Discussions of the military often seem to saturate the media. Their actions, budget, and policies serve as ample fodder for news outlets. Despite the military's active presence on the national stage we often overlook or forget the individuals who comprise it and instead focus on the institution. In my research I have worked with veterans to collect their stories, impressions, and memories of their time in the military. Participant's timelines range from World War II to Operation Enduring Freedom. Their stories not only track the shifting attitudes towards the military but also highlight individual relationships with one of our nation's largest institutions.

American Foreign Policy and Presidential Rhetoric in the Middle East: Strategic and Ideological Interests in the Aftermath of 9/11

Kim A. Quarantello '13, Political Science

ADVISOR: *Paul MacDonald, Political Science*

US foreign policy in the Middle East consists of a complex interplay between strategic and ideological interests that dictate American involvement in the region. Although many scholars argue that the terrorist attacks on September 11, 2001 profoundly altered the trajectory of US foreign policy, others state that the policies pursued were consistent with the American liberal tradition. My research evaluates these contrasting theories and determines the importance of strategic and ideological interests from the 9/11 terrorist attacks to the declaration of war in Iraq in March of 2003. I will analyze President Bush's foreign policy rhetoric within this time frame and present data collected using content

analysis methods to quantify US foreign policy objectives post-9/11. This research reveals the implications of American engagement in the Middle East and may be utilized as a point of comparison for recent US foreign policy decisions in response to the Arab revolutions.

Being a "Good Neighbor": The United States' Involvement in General Pinochet's Coup of 1973

Rachel E. Cherny '13, History and Classical Civilization

ADVISOR: *Ryan Quintana, History*

On September 11, 1973, General Augusto Pinochet Ugarte led the coup that ousted the first-ever elected Marxist president, Salvador Allende. The coup was fueled by Anti-communist support from the U.S., an injured Chilean economy, and an extreme class polarization present at the time. Once in power, Pinochet used his military strength to rule the country as an authoritarian dictator for 16 years. During that time, Pinochet committed countless human rights violations by torturing those he deemed to oppose his regime.

This Independent Study seeks to examine the exact relationship between the U.S. government and the Chilean government from the late 1960s through the coup of 1973 and its immediate after effects. Many historians attribute the U.S. involvement in the coup to neoimperialism, the Red Scare, or a mixture of both. By mainly examining primary and Intelligence sources, the purpose of and exact involvement of the U.S. should be illuminated.

Constructions of Gender and Notions of Belonging (panel discussion) Jewett Arts Center 454

Narratives of Women's Bodies During Childbirth: Biomedical vs. Holistic Models

Jane Adkins '13, Women's and Gender Studies

ADVISOR: *Irene Mata, Women's and Gender Studies and Rosanna Hertz, Women's and Gender Studies*

Childbirth is one of life's landmark experiences for many women: a physiological feat marking the beginning of motherhood. When giving birth, women integrate the philosophies and teachings of their healthcare providers to understand their own internal experiences. Healthcare providers have constructed various narratives of women and their bodies during childbirth, and these narratives directly manifest themselves during the birth experience.

This presentation will compare two major frameworks for understanding childbirth: the holistic model, as generally practiced by midwives, and the biomedical model, as generally practiced by obstetricians. I will examine this issue from a gender, race, and class perspective, considering how intersecting social identities and disparities interact to influence interactions between women and care providers.

Familiarity and Freedom: Conceptions of Home by Queer International Students of Chinese Descent

Eman Wei-Hsin Ma '13, Psychology and Women's and Gender Studies

ADVISOR: *Irene Mata, Women's and Gender Studies and Rosanna Hertz, Women's and Gender Studies*

This project focuses on my ethnographic research project on Gay/ Lesbian international students of Chinese descent at Wellesley College. I sought to identify how these students conceived of “home,” “family,” and “coming out.” I had a particular interest in disrupting and complicating the mainstream narrative of “coming out” from an oppressive home space into a liberated queer space, especially in the context of a Chinese student choosing to attend Wellesley College. One narrative I reference focuses on the importance of being “shou,” or familiar, with somebody, and how “coming out” is not really necessary when you are “shou” with someone. Another narrative emphasizes the idea of “freedom,” and how departure from “home” is painted as necessary to achieve this “freedom.” Both of these narratives conceive of a queerness that is inseparable from “Chinese-ness”; the meaning of the search for a “home” and a sense of belonging shifts depending on context.

Temporary Families: Living In and Out of the Foster Care System

Catalina Santos '13, Women's and Gender Studies

ADVISOR: *Irene Mata, Women's and Gender Studies and Rosanna Hertz, Women's and Gender Studies*

As of 2010, there are approximately 400,000 children in the foster care system in the United States. Children are placed in foster care for various reasons including abuse, neglect, and abandonment. Over 75 percent of these children are placed under government care and into private homes with foster families. Approximately equal numbers of boys and girls are placed in foster care for varying lengths of time. 70 percent of youth are in the system for

less than two years. About half are reunited with a parent (but often return to the system) and the rest are adopted, emancipated or live with another relative. The race, religion, and social class of the host families in comparison to the children who enter the system will be discussed. An analysis of government reports, demographics data and scholarly work will show how the foster system is transforming families.

The Construction of Gender Relations in the American Automotive Industry Consumer Advertisements

Roxana Mir '15, Women's and Gender Studies and Neuroscience

ADVISOR: *Irene Mata, Women's and Gender Studies and Rosanna Hertz, Women's and Gender Studies*

This study focuses on consumer advertising in the automotive industry as it relates to gender. A review of automotive advertisements from the 1950s reveals that they primarily showcased women's role in the domestic sphere, which inevitably portrayed women as being subservient or secondary to men. In comparison, modern commercial advertisements are more sexualized and often focus on the physique of the woman's body as opposed to the product itself. The aim of this study is to explore whether the ads from the 21st century are more reflective of the evolution of women's role in the society or if they reiterate the same stereotypical narrative under the guise of sexual liberation. Furthermore, this study also aims to examine gay and lesbian advertising to see whether or not this form of advertisement upholds the masculine power complex inherent in gender relations through the redefinition of heteronormativity.

Cultural Crossroads: Redefining the Asian American Experience

(panel discussion) Pendleton Hall West 116

Tiffany K. Chan '15, Biological Sciences, Angela Y. Gu '15, Undeclared, Lauren M. Richmond '14, Economics and Art History, Lindsey L. Tang '15, Undeclared, Grace D. Zhao '15, Economics and American Studies

ADVISOR: *Yoon Lee, American Studies and English*

What is the Asian American experience? Today's media shapes the way we perceive Asian Americans and constructs this community's collective and individual identities. Media can both perpetuate age-old stereotypes and encourage

radical thinking in the Asian American community. As a result, modern media proves to be both an oppressive burden and an outlet for expression for the Asian American community. Using a variety of media sources, we analyze the modern Asian American response to the model minority myth, the portrayal of Asian American women, and stand-up comedy to recognize the internal diversity of this racial minority and the dangers it faces in modern American society.

Perspectives on Social Issues II: Research from the Wellesley College Freedom Project

(panel discussion) Jewett Arts Center 452

Free Market Solutions to Inhumane Prison Conditions: The Prison Voucher System

Sabrina Giglio '15, American Studies

ADVISOR: *Thomas Cushman, Sociology*

Generally speaking, American prison conditions are terrible. In times of economic crisis, no elected officials want to sacrifice their positions by providing extra funding for those incarcerated in lieu of providing resources for their law-abiding constituents. How can we improve daily life for the more than 6 million people behind bars? Libertarians have proposed solutions based on free-market capitalism. One of the most prominent of these is a voucher system. Upon sentencing, prisoners are given vouchers and are allowed to choose from an array of prisons. The system will create competition among the prisons, and thus force them to improve conditions if they want to attract prisoners (or “customers”, in this example). My presentation focuses on the voucher system as a means to improve our incarceration system that is grounded in free-market and libertarian values.

Drug Wars, Drug Laws, and The American Prison

Melissa Clark '14, Media Arts & Sciences and English

ADVISOR: *Thomas Cushman, Sociology*

There are over 6 million people incarcerated in American prisons. Debates on prison conditions hinge around reducing the numbers of prisoners. Many prisoners are incarcerated for using drugs and not engaging in the more serious crime of drug trafficking. Libertarians have proposed that the prison problem can be ameliorated significantly by reforming drug laws in the US. This presentation outlines a libertarian approach to the war on drugs, the reform of American drug laws, and their effect on prison conditions in the United States.

Libertarian Perspectives on the Legalization and Regulation of Drugs

Bailey Desmond '13, Economics and Philosophy

ADVISOR: *Thomas Cushman, Sociology*

This research examines whether policies and practices for drug legalization in the United States are consistent with libertarian ideals. For example, is it better for current marijuana laws to be loosely enforced while the industry is largely unregulated, or is complete legalization and further regulation more respectful of personal freedoms? I will examine this question through different libertarian lenses. Which scenario is economically more free. Which scenario is more respectful of humans' natural liberties? Which of these two is preferable in today's America? The analysis of drug policy will illuminate a tension central to contemporary American political discussion: a tug-of-war in which citizens try to prioritize their economic freedoms over their civil liberties, and vice versa.

On Silencing, Free Speech, and Harm

(interactive teaching presentation)
Pendleton Hall West 117

Chloe E. Emerson '15, Undeclared, Morvareed E. Rezaian '14, Cognitive and Linguistic Sciences, and Ilana Z. Walder-Biesanz '13, Systems Engineering (Olin)

ADVISOR: *Mary McGowan, Philosophy*

Some feminists claim that pornography silences women and thereby violates women's right to free speech. In this presentation, we focus on a particular account of silencing and we raise a challenge to that account. In particular, we offer a case, the drowning case, that appears to satisfy the definition of silencing but this result is counter intuitive. Thus, either the account must be modified (to avoid this result) or it must be shown that the drowning case is an instance of silencing after all.

Humanities

Global Asia

(short talks) Pendleton Hall East 139

Confucianism in East Asia

Yu Zhou '16, Undeclared

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

Chinese culture has exerted an enormous impact on other East Asian countries throughout history. Confucianism is one of the most striking Chinese influences among East Asia. This presentation will focus on the spread of Confucianism from China to Japan and Korea, and how Confucianism is demonstrated through Chinese, Japanese and Korean literature. We will introduce the origin and basic ideas of Confucianism in China, and the development of Neo-Confucianism in Korea and Japan in the 17th and 18th century. By comparing the traditional literature novels in China, Japan and Korea, this presentation will give a general analysis of the similarities and differences of the influence of Confucianism in these three East Asian countries.

Tulsidas' Ramcharitmanas: Translating Medieval Hindu Devotional Poetry

Elin R. Nelson '13, South Asian Studies and Comparative Literature

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

While living in Varanasi, India, I discovered the Awadhi poet Tulsidas' Ramcharitmanas, a popular retelling of the Ramayana, the Hindu epic tale of Prince Rama's adventures. People often quote, recite, and perform scenes from the poem – once I heard it being recited for over twenty four hours to bless a newly built home. Most memorably the Ramcharitmanas is performed during Ramlilas (reenactments of the story of Rama) which are often timed to end on the festival of Vijaydashami to celebrate the victory of Lord Rama over the demon Ravana. This fall, I spent the semester translating excerpts from Ramcharitmanas, learning the language Awadhi and analyzing the metrical structures of the poem. I looked specifically at the character of Valmiki, a famous Sanskrit author of one of the most influential versions of the Ramayana, and how he interacts with Rama during Rama's exile in the Dandakaranya Forest.

An Ideal Woman: The Masochistic Pursuit of Feminine Beauty in the works of Junichiro Tanizaki

Shelby B. Robertson '13, Japanese Languages and Literatures

ADVISOR: *Eve Zimmerman, East Asian Languages & Literatures*

In his novels and short stories Japanese writer Junichiro Tanizaki (b. 1886–d.1965) explores the theme of man's desire for self destruction and self torture through his heroes' masochistic pursuit of beautiful but cruel women. Tanizaki's protagonists deliberately draw out the wicked nature of the objects of their desire, molding them into femme fatales who eventually sadistically persecute their creator. The usually detached protagonists make a distorted attempt at correcting their feelings of alienation from society through the sense of purpose and passion provided by their pursuit of an unattainable feminine beauty.

Who Are You, Who Am I?: The Role of Otherness in Asian Identity Formation in Latin America

Victoria M. Nguyen '13, Spanish

ADVISOR: *Koichi Hagimoto, Spanish*

There have been major Asian diasporas to Latin America throughout the 20th and 21st centuries; however, the Asian immigrants' journeys still remain one of the lesser known subjects of both Latin American and Asian history. This narrative's importance should not be downplayed since it reveals how otherness plays a crucial role in cross-cultural relations, community prosperity, and the development of cultural customs. Otherness has played a significant role in prejudice towards Asians in Latin America, the formation of "Nikkei" culture, the dynamics between two generations of Asian-Latin Americans, and the development of both Asian and Latin American identity. This population may be very specific, but the implications of otherness are universal as they influence how we define others and how we define ourselves.

Food and Travel

(short talks) Jewett Arts Center 450

Labyrinth, the Shape of the Modern Mind: Kafka, Borges and Auster

Jiwon Hahn '13, Comparative Literature

ADVISOR: *Lawrence Rosenwald, English*

Since Daedalus built the labyrinth to imprison the Minotaur, the concept of labyrinth has forever charmed literature.

Labyrinth is a puzzle composed by the writer and handed over to the reader. Yet the labyrinth by definition defies anyone's full comprehension/penetration, so that even the Daedalus-writer is lost within his own creation. As the metaphor of both mind and the world, the labyrinth also blurs the boundary between the external and the internal. Taking the literary motif of labyrinth as a space of comparison, I am looking into the fiction of Franz Kafka, Jorge Luis Borges and Paul Auster. The thematic concerns of the study include meta-fiction, authorship, mental and physical representation of space and the experience inside a labyrinth compared with that of wandering in the city (*flânerie*). The three writers' explicit and implicit usage of the labyrinth in their fiction contributes to their penetrating and powerful depiction of the modern mind.

Home and Away: Questions of Travel in John Donne and Andrew Marvell

Gabrielle C. Linnell '13, Medieval/Renaissance Studies

ADVISOR: *Sarah Wall-Randell, English*

In 17th-century England, descriptions of the cosmos were in flux. Explorers, immigrants and colonists were re-defining the global map; local surveyors and cartographers were re-fixing the boundaries of villages and hometowns; early scientists were re-discovering the human body, calling into question older conceptions of how the universe functioned, and humankind within it. Examining poems of love, politics, faith and real estate, this project compares and contrasts John Donne and Andrew Marvell, two distinct and masterful poets, in their creation of geographical metamorphosis and reactive space within their literary works to offer a microcosmic portrait of the world. (Research supported by the Jerome A. Schiff Fellowship.)

Mad Funny: Representing Madness in the 18th Century

Christina J. Hsieh '13, English

ADVISOR: *James Noggle, English*

The Age of Reason saw frequent deployment of madness as a literary device and subject in parody and comic genres. Charlotte Lennox's novel *The Female Quixote*, a parody of Cervantes's *Don Quixote*, cautions against dogmatic reasoning that insists on universal adherence to an individual standard. Lennox emphasizes the redemptive potential of reciprocal moral sentiment and its power

to transcend the limitations of thought and language. In contrast, Jonathan Swift remains deeply troubled by the instability of language and academic theory as corruptions of rationality. Swift's *A Tale of a Tub* and *A Digression Concerning Madness* convey the subjectivity of madness through a highly idiosyncratic style of exposition. Nonetheless, Lennox and Swift share a suspicion of the kind of rigidity of thought that aspires to rationality but verges on madness.

A Comparison of Food Still Lifes by Pieter Claesz and Jean-Baptiste-Siméon Chardin

Danielle R. Ezor '13, Art History and Studio Art

ADVISOR: *Margaret Carroll, Art*

Still-life paintings have long been relegated to the lowest levels of painting in art theory and in contemporary discussion, yet the painters Pieter Claesz and Jean-Baptiste-Siméon Chardin gained fame as still-life artists in their own lifetimes. In seventeenth-century Haarlem, Claesz developed the famed monochrome breakfast still life, known for humble and natural depictions of standard Dutch meals. Continuing in Claesz's tradition, Chardin painted modest, yet dynamic, depictions of simple French meals in the 1750s and 1760s. Both artists not only derived aspects of their work, such as brushstroke, composition, and color, from the famous Antwerp painter, Frans Snyders, but they also became famous for their still lifes during similar socio-economic periods in their respective societies. Their individual styles and depictions of simple meals garnered surprising interest and adoration for still life from the public in their own lifetimes.

Wellesley Chamber Music Society Long Performance: Exploration and Performance of Antonin Dvorak Piano Quintet No. 2 in A major, Op.81 (long performance) Jewett Arts Center Auditorium

Graeme L. Durovich '15, Undeclared, Natalie J. Griffin '14, Economics, Serena Liu '13, Biological Chemistry, Maria Nikitin '13, Art History, Audrey M. Wozniak '14, Music,
ADVISOR: *David Russell, Music*

Audrey Wozniak '14 and Natalie Griffin '14, violins, Graeme Durovich '15, viola, Serena Liu '13, cello, and Masha Nikitin '13, piano will perform Antonin Dvorak's Piano Quintet

No. 2 in A major, Op. 81 as a culmination of a year-long project in Wellesley's Chamber Music Society. Interspersed within the performance will be presentations on Dvorak himself and on this seminal example of this much-beloved musical genre. The topics will include Dvorak's life and his role in Czech nationalism, the use of folk motifs in his music, the influence of his relocation to America on his oeuvre, and the historical context and formal analysis of the piano quintet.

Science and Technology

Green Means Go: Time for Environmental Action

(short talks) Pendleton Hall West 116

To Sink or Swim: Explaining U.S. Coastal Sea Level Rise Policy

Kelly A. Mercer '13, Environmental Studies

ADVISOR: *Elizabeth DeSombre, Environmental Studies*

Hurricane Sandy foreshadowed the dire consequences of sea level rise over the next century by demonstrating how ruthless the ocean could be. As global climate change causes sea levels to rise, those living in coastal regions face devastating harm. In the absence of a federal regulation, coastal states must elect to create policy to protect their shorelines. My senior thesis analyses what determines whether coastal states pass policy in preparation for sea level rise. I look at the factors such as political history, economy, population, and physical coastline to understand what drives coastal policy. My research explains which states will sink and which will swim as sea levels rise. (Research supported by a Schiff Fellowship)

The East-West Corridor: An Analysis of Nonviolent Direct Action at Work

Molly R. Cyr '13, French and Peace and Justice Studies

ADVISOR: *Catia Confortini, Peace Studies*

The national construction company Cianbro recently submitted a proposal to the Maine State government entitled "The East-West Corridor". The proposal details a massive construction project that would create an energy corridor bisecting Maine. This corridor would be used to transport tar sands, crude oil and out-of-state trash from the Midwest and Western Canada to Eastern Canada. Environmental and community concerns abound as the plans for the corridor

are vague. The effects of the East-West corridor on the environment and human beings could be severe; the large scale of the project interrupts wildlife migration patterns, private property and, potentially, state park land. I will research the proposal, interview local people, state officials and activists and compile a coherent project that will discuss the components of the proposed energy corridor. I will pay particular attention to nonviolent direct action tactics employed by environmental groups in response to the construction of the corridor.

Environmental Conservation and the Struggle for Environmental Justice and Sustainable Development in Vieques, Puerto Rico

Ada P. Smith '13, Anthropology and Environmental Studies

ADVISOR: *Deborah Matzner, Anthropology*

I hope to tell the story of the contested landscape of a former military training base in Vieques, a small island municipality of Puerto Rico. Military occupation on the island from 1940 until 2003 led to serious environmental and economic devastation. In 2003, the Navy gave two-thirds of the island to U.S. Fish and Wildlife. In effect, toxic wasteland is now under “conservation” where clean-up is impossible given its status as a wildlife sanctuary. This paradox has been kept out of local dialogue and has provided popular media with a platform to dub Vieques as an untouched gem of the Caribbean.

Environmental Policy in the Bag: What Plastic Bag Policies Teach Us about How to Make Successful Environmental Policy and Change Behavior

Katherine A. Corcoran '15, Environmental Studies

ADVISOR: *Elizabeth DeSombre, Environmental Studies*

Single use plastic bags have become a regular convenience at grocery stores in recent decades, quickly replacing paper bags. These plastic bags now nag at us in many ways, environmentally and societally. Plastic bags consist mainly of fossil fuels petroleum and natural gas, put tons of waste into landfills, and produce lots of ugly litter that chokes marine life and clogs drainage systems, among other problems. Every member of society pays in some way for the costs that stem from plastic bags. Thus, an array of cities, states, and countries has implemented policy directed at

reducing and eliminating bag use, mainly by changing citizen's behavior. The successes and failures of these policies show interesting trends about what makes for good environmental policy and what doesn't. (Research supported by the Sophomore Early Research Program)

Seeing is Believing: Vision and Optics

(short talks) Science Center 396

Binocular Stereopsis in Areas V2, V3, and V3A of the Macaque Monkey

Erin M. Yeagle '13, Neuroscience

ADVISOR: *Bevil Conway, Neuroscience*

Stereopsis is a binocular cue to depth, calculated using the disparity between images projected on each retina. In the 1960s, Hubel and Wiesel identified neurons selective for this disparity in macaque monkeys, but a full account of the work was never published: the cells lay in “Area 18,” a region whose organization was then poorly understood. Using functional magnetic resonance imaging (fMRI), we generated an atlas of macaque visual areas that we aligned with histological sections from Hubel and Wiesel's experiments on stereopsis. Collaborating with Hubel and Wiesel and guided by their laboratory notes, we located most of their original recording sites, allowing us to place their findings in new context with contemporary results. (Research supported by the National Science Foundation and a Jerome A. Schiff Fellowship Honorable Mention.)

What Is One Plus One? Perceiving Asymmetrical Facial Expressions of Emotions

Katherine E. Limoncelli '14, Psychology

ADVISOR: *Paul Wink, Psychology*

The study of human facial expressions explores how people recognize and interpret symmetrical and asymmetrical emotions. Asymmetrical facial expressions result from brain asymmetry, where the left and right brain hemispheres work both together, as well as separately, in terms of creating, recognizing, and ultimately interpreting particular emotional displays. In this study, four synthetic faces (2 female and 2 male “actors”) encoded happiness, sadness, or were left in a neutral state. The right and left halves of the faces were combined to create all 9 possible variants per actor and 36 faces total. All faces were presented on a computer and participants had to rate either discrete emotions (e.g., happiness, sadness, anger, etc.) or how

the expressions relate to underlying affective dimensions (valence, arousal). The focus of the study is on whether the manipulation of the facial halves for happiness, sadness, and neutrality leads to the perception of different emotional states.

Assessing the Morphology and the Viability of Engineered Tissue with Combined High Resolution Optical Imaging - Raman Spectroscopy

Laura Fandino '14, Biological Sciences

ADVISOR: *Michelle LaBonte, Biological Sciences*

Assessing the morphology and viability of tissue constructs is key to developing an effective way to engineer tissue for transplantation. At present the production of engineered tissue requires the concurrent production of two identical transplants. One transplant is used for destructive quality control and the second one is implanted into the patient. Ideally, the non-invasive characterization of such tissue engineering samples would allow one transplant sample to be both tested and implanted. Here we present a multimodal approach for non-destructive characterization of tissue constructs that assesses morphology through Optical Coherence Microscopy (OCM) and functionality through Raman Spectroscopy. This promising technology is likely to contribute to successful and economical clinical applications of tissue grafts.

The Detection and Representation of Foreground vs. Background Objects

Da In Kim '13, Neuroscience and Computer Science

ADVISOR: *Ellen Hildreth, Computer Science*

People need to perceive depth to understand the three-dimensional structure of a scene and to gauge the distance between objects. One important visual cue for perceiving depth is stereo. It is especially important to distinguish between foreground and background objects in the analysis of a scene. We reach first for objects in the foreground and recognize objects more easily when they appear in front. In my thesis, I conducted perceptual experiments that show that the human visual system analyzes foreground objects more quickly and accurately than background objects, when using stereo to perceive depth. I also developed a computer algorithm to analyze 3-D scene structure from stereo images, incorporating this knowledge that people process foreground and background

objects differently. Using a multi-resolution approach that processes foreground objects at a higher resolution, this algorithm may reduce the computational resources needed to perform object segmentation without losing essential information about scene structure.

App Inventor Development at Wellesley

(panel discussion) Founders Hall 126

Karishma Chadha '14 Computer Science, Erin L. Davis '15, Computer Science, Emily L. Erdman '13, Neuroscience and Computer Science, Johanna L. Okerlund '14, Computer Science and Mathematics

ADVISOR: *Franklyn Turbak, Computer Science*

App Inventor is an online blocks-based programming environment open to the public where anyone can easily create mobile apps for Android phones. The drag and drop interface makes it accessible even to people with little or no programming experience. As members of the App Inventor development team, we are working to make this product better and will be discussing our individual App Inventor development projects: blocks to text and text to block conversion to allow instructors to read students' more extensive programs and more advanced users to program faster, using OAuth and POST to allow users to post pictures from their phones to various photo sharing sites on the web, and processing data from users' projects to learn how people use App Inventor as a programming environment and as a teaching tool.

Perspectives on Public Health, Patient Access and Disease: from Accra to Boston

(panel discussion) Pendleton Hall East 239

Camylle J. Fleming '14, Women's & Gender Studies, Alexandra Grzywna '14, English, Shikah Kofie '14, Women's & Gender Studies and Africana Studies, Blair L. Uhlig '14, Classical Civilization and Health and Society

ADVISOR: *Donna Patterson*

This panel reflects some of the research projects conducted in the fall 2012 section of Health, Medical Professionals, and the Body in the African Diaspora. Ali Grzywna examines the intersections of syncretic religious traditions on Boston's Haitian immigrant population. Blair Uhlig explores how negative sub-narratives influence black motherhood. Shikah Kofie examines the impact of

glaucoma on Ghana's economic development. Camylle Fleming argues that many anti-obesity campaigns are incorrectly responding to high-risk populations. Collectively, these papers begin to explore some of the issues that impact African-descended populations in Africa and the Americas.

Modeling the World, One Byte at a Time

(panel discussion) Founders Hall 120

Raissa D. Antwi '13, Mathematics, Jacquelyn E. Blum '14, Chemistry, Connie Chen '15 Undeclared, Amelia B. Kreienkamp '13, Chemistry, Lucy Y. Liu '13, Chemistry, Helena W. Qi '14, Chemical Physics, Ying Yi Zhang '13, Economics and Chemistry

ADVISOR: *Mala Radhakrishnan, Chemistry*

Can a computer byte its way into the living world? The Radhakrishnan laboratory uses computational methods to investigate problems of biological and theoretical significance. Many of our projects focus on understanding the electrostatic determinants of protein binding, which can lead to improved drug design. Other projects aim to improve therapeutic treatments for diseases such as HIV via a computational study of patterns of drug resistance. Finally, another study focuses on modeling new, unprecedented molecules like the newly developed nanocar. Taken together, our work exemplifies the versatility of computational chemistry in investigating the world around us.

Role of PATL in Plant Vascular Development

(panel discussion) Science Center 278

Angela C. Ai '15, Biological Chemistry, Emma M. Britain '13, Biological Sciences, Nevatha Mathialagan '15, Anthropology, Elze Rackaityte '13, Biological Sciences

ADVISOR: *T. Kaye Peterman, Biological Sciences*

The plant vascular system accomplishes an incredible feat of carrying water and nutrients, sometimes for hundreds of kilometers. Vascular patterns must be rigid enough to supply the organism with vital water and nutrients, but also flexible enough to account for environmental changes. This self-assembling network begins to lay the groundwork during early embryogenesis when the embryo is patterned with procambial cells. The coordination of this replicable, yet adaptable pattern de novo in each leaf is associated with auxin hormone domains which predict the procambial cell differentiation.

The patellins (PATLs) are Arabidopsis thaliana Sec14-related proteins that are thought to function in membrane trafficking (Peterman 2004). Recent phylogenetic studies suggest that the PATL family arose during the evolution of the first vascular plants. We investigate the connection of auxin domain establishment and PATL function in the plant vascular system using a number of molecular techniques.

Social Sciences

Truth, Reconciliation, and Holding on to Identity

(short talks) Pendleton Hall West 212

Personalizing Justice: Beyond the Chambers of the ICTY to the People of Sanski Most

Kathleen A. Sprague '13, Anthropology

ADVISOR: *Anastasia Karakasidou, Anthropology*

My research focuses on the efficacy of the International Criminal Tribunal of the Former Yugoslavia (ICTY), a judicial mechanism established in The Hague in response to the mass atrocities committed throughout the Balkans in the 1990s. Based on the ethnographic fieldwork I conducted in Sanski Most, a small town in northwestern Bosnia, my research explores residents' perceptions of justice following the Yugoslav wars and their overlap as well as disjuncture from Western priorities and initiatives. More broadly it hovers at the intersection of legal anthropology and human rights. While my research is founded soundly in anthropological methodology and literature, I also utilize insights from other disciplines in order to contribute to the multidisciplinary discourse surrounding transitional justice.

The Formation of Tibetan National Identity in Diaspora

Tenzin Y. Dongchung '13, Peace and Justice Studies

ADVISOR: *C. Pat Giersch, History*

I focus on understanding the formation of Tibetan national identity in diaspora. Through reference to anthropological literature as well as my own interviews, I specifically study the impact of a) the physical dislocation of Tibetans to India, b) the establishment of exclusive Tibetan schools in India, and c) dynamics of exile politics on the Tibetan people's consciousness as a

national group. My interview subjects are first generation Tibetans who studied at the Tibetan schools and eventually helped to build and maintain the diaspora institutions. Overall, I explore the themes of nationalism, nation-state and identity formation.

Pacification of Rio's Favelas Through a Feminist Security Lens: The Case of the Escondidinho Favela Residents

Danielle C. Milagre Pimenta, Senior Davis Scholar, Peace and Justice Studies

ADVISOR: *Catia Confortini, Peace Studies*

The Escondidinho is a favela (shantytown) that houses almost 6,000 people in Rio de Janeiro, Brazil. As with most favelas in Rio, Escondidinho residents have lived under the power of brutal drug factions for decades. The government implemented the Pacification Program in 2008 to combat the growing power of drug factions in preparation for the hosting of the 2014 Soccer World Cup and the 2016 Summer Olympics. The program is considered to be human centered and so successful that it has been implemented in other cities and also abroad. Using a feminist security approach that seeks to highlight often unheard voices and narratives, I interviewed Escondidinho residents to uncover how the police occupation of their community has impacted their human security. I concluded that the program falls short at providing residents with the human security that residents desire. (Research supported by the Office of the Provost and Dean of the College)

Imperialism, Male Heroism, and Secret Worlds: Understanding the Dynamics of Gender and Dominance in Conrad's Heart of Darkness (panel discussion) Pendleton Hall West 117

Laura B. Mayron '16, Undeclared, Emma D. Page '16, Undeclared, Celina C. Reynes '16, Undeclared

ADVISOR: *Yoon Lee, English*

Taking place at the height of British imperialism, Joseph Conrad's *Heart of Darkness* explores various relationships between aggressor and victim. As Marlow journeys into the depths of the Congo, he discovers both the violent realities of colonization, and the mental deterioration of the mysterious, god-like Kurtz. Meanwhile, the story also addresses the power dynamics

of gender in the late 19th century. Conrad simultaneously allows Marlow to exclude women from the secret-sharing process, while providing a means for women to gain access to the story by way of the frame narrator. However, within the frame story, the women whom Marlow meets along his journey serve as gatekeepers to other, secret world--worlds that Marlow cannot access, given his own prejudice. Linking ideas of imperialism, dominance, and secrecy, our papers examine the various interpretations of "truth" in the novella, as well as who has access to them, and why.

Just Business? Moral Responsibility in a Global Economy (panel discussion) Science Center 277

Chloe Breider '15, Economics, Kalina Deng '14, Philosophy, Mallika Govindan '15, Biological Sciences, Diego Hernandez '13, Business Management and Economics (Babson), Alex Kaumeyer '13, Management-Finance/Economics (Babson), Prerana Nanda '14, Economics, Jenna Russo '14, Spanish and Philosophy, Jeff Stout '14, Business Management and Economics (Babson)

ADVISOR: *Caitrin Lynch, Anthropology (Olin)*

During spring 2013, five students each from Wellesley, Babson, and Olin were invited as Fellows for "Just Business? Moral Responsibility in a Global Economy," a seminar series funded by a BOW Mellon Fund grant. Led by seven BOW faculty/staff, the series culminates in an April 27 summit for the BOW community. In cross-campus teams the students are developing digital stories on topics including Caribbean tourism, Mexican-U.S. immigration, and the global diamond industry. "Just Business" poses questions including: What difficulties arise in tracing the path of a product from producer to consumer? How can global corporations take responsibility for the environmental effects of their operations? Is there a conflict between the imperatives to make a profit and to serve the social good? Is it morally wrong to trade with countries that do not guarantee core labor rights? Should you buy that fair trade coffee or t-shirt?

Cultural Universalism, Cultural Relativism and Minimal Morality: Ethnographic Case Studies

(panel discussion)

Jewett Arts Center 454

Overlapping Standards: The Banning of the Veil in France

Pauline Day '16, Undeclared

ADVISORS: *Inela Selimovic, Spanish and Thomas Cushman, Sociology*

In September 2010, President Sarkozy of France became heralded and hated after the passage of a law prohibiting the wearing in public of clothing covering the face, including burqas and niqabs. The law sparked a debate, in which both sides, the French government, and the Muslim community, have claimed to be operating under the principles of cultural universalism and cultural relativism. This case in France illustrates an ongoing tension between, on the one hand, universalist principles of freedom of expression and the state's equal protection of citizens and, on the other hand, the claims that people have a right to practice their culture. For human rights organizers, the question becomes is it possible to ever reconcile this tension, and if so, how can you begin to practically do so?

Honor Killings and Human Rights: Reconciling Competing Cultural Values in the International Community

Adeline Lee '16, Undeclared

ADVISORS: *Professor Inela Selimovic, Spanish and Professor Thomas Cushman, Sociology*

From a sociological standpoint, honor killings are a means for the restoration of societal equilibrium after a family's honor has been stained by sexual impropriety. Honor killing is also a cultural practice that extinguishes an individual's right to life in order to protect the collective identity and rights of a group. This presentation explores traditional notions of honor and dignity in relation to broader international human rights frameworks. I assess the practice of honor killings through the lens of what human rights theorist Jack Donnelly refers to as "weak cultural relativism." I propose a "minimal morality" that seeks rapprochement between human rights advocates and proponents of honor-based violence. The ethics of a minimal morality seeks to allow members of groups who commit human rights violations to continue to cultivate their own cultural identity while also ensuring that the fundamental human right to life is protected.

Cultural Traditions versus Human Rights: The Case of Uganda's Anti-Gay Bill

Samantha Spiga '13, Political Science

ADVISORS: *Inela Selimovic, Spanish and Thomas Cushman, Sociology*

In 2012, the US Secretary of State, Hillary Clinton, spoke to the United Nations in Geneva. In her speech, she advocated for the rights of the LGBT community, stating that gay rights and human rights are one in the same. Clinton's speech came soon after the media uproar regarding Uganda's proposed Anti-Gay Bill. With punishments ranging from a years in prison to perhaps even the death penalty, the proposed Anti-Gay bill would infringe on African peoples' human rights. Same-sex relations are illegal in most African countries as well as in many Western countries, a fact which indicates that there are strong cultural traditions at work that govern diverse forms of human sexuality. Many have pointed to religious and cultural arguments to support Uganda's proposed bill. However, an immense international backlash from the human rights community has put these issues in the spotlight. This presentation will focus on the tension between respecting cultural traditions and ensuring the protection of individuals' basic human rights.

Humanities

The Search for Self Across Continents

(short talks) Pendleton Hall East 339

You Can't Go Home Again: A study of Colonial Impact on Nigerian Literature through the Works of Chinua Achebe and Wole Soyinka

Clara S. Brodie '13, English

ADVISOR: *Margery Sabin, English*

My project is, in briefest terms, an examination of Chinua Achebe and Wole Soyinka as colonial and postcolonial Nigerian writers. Through my reading and analysis, I am endeavoring to gain an understanding of how both writers convey the irrevocable consequences of colonialism through their literature and how they represent various aspects of the hybrid identity that British influence on their cultures has created.

Forging a New Russian Hero: Post-Soviet Science Fiction and Its Moral Objectives

Elena S. Mironciuc '13, Russian and Studio Art

ADVISOR: *Thomas Hodge, Russian*

Soviet fiction writers had to submit to strict censure and propagate an image of the hard-working Soviet man. Right and wrong were clearly defined by the needs of the Communist Party. Once the censure was gone, however, the Russian fictional hero changed. I examine this phenomenon in the careers of the post-Soviet science-fiction authors Sergey Lukyanenko and Marina and Sergey Dyachenko. Their fictional writing is powerful because they can ask old questions in a context devoid of the reader's stereotypes, prejudices, or past experiences. A recurring theme in Lukyanenko's writing is the stark contrast between "us" and "others," humans and aliens, or magicians living in present-day Moscow and "normal" people. An important theme in the Dyachenkos' work is forgiveness, as exemplified in their novels *The Scar* and *Skrut*. In sum, the modern Russian science-fiction protagonist is three-dimensional and flawed. Unlike protagonists of the Soviet era, he is not a creature who dwells only within the confines of literature. (Schiff Fellowship)

Nadine Gordimer, "The Conscience of South Africa"

Mariana Zepeda '14, English and History

ADVISOR: *Margaret Cezair-Thompson, English*

In her work, South African writer Nadine Gordimer explores the fraught tensions of the human experience during apartheid and its aftermath, striving to represent the array of voices that compose South African society. Gordimer belonged to a minority of white South African activists sympathetic with anti-apartheid ideals and, consequently, has often been excluded from the canon of African postcolonial literature. This tension mirrors that which she explores in her work. At the core of Gordimer's fiction lie characters striving to understand their relationships with one another and their roles within the South African nation. In her first novel, "The Lying Days," and stories like "Which New Era Would That Be?" and "The Smell of Death and Flowers," Gordimer explores the complex relationships that emerge in an era of dissidence, born of a shared impulse to challenge the color bar and reimagine South Africa.

Notions of Inheritance in Joyce's Ulysses and Faulkner's Absalom Absalom!

Lucy V. Cleland '13, English

ADVISOR: *Margery Sabin, English*

In the course of my 360/370, I am looking at the implications of failed rebellions in the places, generations and individuals presented in Faulkner and Joyce's novels (specifically Ulysses, Absalom Absalom and The Sound and the Fury). Questions arise regarding what is inherited, how defining that inheritance becomes for individual (especially masculine) self-hood, where it comes from, and how individuals function under it and within it. I seek to explore notions about nations, place, atmosphere, blood lines, and fathers, and investigate what significance the similarities and differences between these two modernist authors may hold.

Asian American Studies: Why it Matters to Everyone (panel discussion) Founders Hall 120

Bernice Y. Chan '16, Undeclared, Karina S. Chan '16, Undeclared, Julie Chen '15, Undeclared, Christie H. Lee '14, Political Science, Rebecca J. Leo '13, Chinese Language & Literature and American Studies, Sukin Sim '16, Undeclared, Kily A. Wong '16, Undeclared, Ya Yun Zhang '13, Sociology and Economics
ADVISOR: *T. James Kodera, Religion*

The Wellesley Asian Alliance has been advocating for Asian American Studies and raising awareness of Asian American issues at Wellesley College since its founding in 1994. With the movement for Asian American Studies rising along East Coast colleges, and a rapidly increasing Asian American population, Asian American issues are becoming more salient to the general population. Furthermore, the histories of minorities are interconnected through countless commonalities from their experiences at Wellesley and in a larger American context. For instance, it has been reported that in Wellesley's history, Asian students and students of African descent used to be forced to room with their respective ethnicities, or be in their own singles. This presentation covers that history of Asians in relation to other minorities at Wellesley and in America. WAA will also discuss what exactly Asian American Studies is and why it matters, especially to those not of Asian descent.

From the Sublime to the Ridiculous, And Back Again (long performance) Ruth Nagel Jones Theatre, Alumnae Hall

Jane E. Adkins '13, Women's & Gender Studies, Rachel E. Cherny '13, History and Classical Civilization, Margaret E. Dunn '13, English and Theatre Studies, Vanessa K. Greenleaf '14, Theatre Studies, Hilary J. Gross '13, English, Elizabeth M. Jaye '15, Classics, Alexa P. Keegan '14, Psychology and French, Lindsay S. Rico '13, Theatre Studies, Emily M. Shortt '13, Biological Chemistry, Annie Wang '14, Art History and Cinema and Media Studies
ADVISOR: *Nora Hussey, Theatre Studies*

Each academic year, there are nearly a dozen theatrical productions put on by students across the campus. From the large-scale productions of the theatre department, the classical work of the Shakespeare society, and the independent projects of Upstage and theatre majors. This presentation shows off short scenes from each of the eclectic performances presented to the community throughout the year.

Exploring the Musical Vibrancy of the Baroque through Eighteenth Century Instruments (long performance) Pendleton Hall West 220

Elizabeth M. Bachelder '13, Economics, Samantha M. Stephens '14, Physics, Madeline M. Thayer '15, Classics and German Studies
ADVISOR: *Suzanne Stumpf, Music*

Playing on period instruments provides critical historical insight into the rich sound world of the eighteenth century. Since Baroque repertoire was conceived and composed with the sounds and technical capabilities of these instruments in mind, historical instruments are naturally able to express the character and phrasing of the repertoire. Further, the construction of these instruments creates built-in color variations between keys that likely would have been anticipated by composers. Although many modern instruments resemble their historical counterparts, their respective timbres and performance practices often differ greatly. This presentation will feature a concert of solo and trio sonatas for harpsichord, traverso, and viola da gamba, along with a discussion about the instruments and the benefits of performing on period instruments.

From Calves to Kindles: The History of the Book (on location presentation) Special Collections, Clapp Library

Cassandra L. Hoef '15, Computer Science, Dominique R. Ledoux '14, Art History, Morgan E. Moore '15, Medieval/Renaissance Studies, Polina N. Soshnin '14, Computer Science and Economics
ADVISOR: *Ruth Rogers, Library Collections*

Some of the most brilliant ideas, inventions and philosophies were all imagined hundreds of years ago. Modern philosophy and technology have evolved from these thoughts but would have never survived past their conception if it were not for the means of preserving them that were developed over the last several millennia. The process of preserving information through books is studied in Art History 299: The History of the Book from Manuscript to Print, which is taught by Ruth Rodgers in the Special Collections Library at Wellesley College. Starting with the creation of writing supports and ending with a bound book, students discover with hands on activi-

ties what life would have been like spreading ideas before the digital age. A large amount of consideration is given to how great works are valued now when read digitally compared to years ago when each line would have been carefully hand-written.

Tactile History: The Story of Wellesley College's Textile Collection (on location presentation) Print Room, Davis Museum

Sara M. Putterman '13, Art History and Religion
ADVISOR: *Jacqueline Musacchio, Art*

Why does Wellesley College have a collection of European textiles that range from velvet dress borders and silk damasks to liturgical garments? Given to Wellesley College in 1875 as the centerpiece of a study collection for art history students, this collection has been in storage for years. What did nineteenth century trustees, professors, and students see in this group of fragmentary, poorly documented textiles that made them a valuable teaching tool? Analyzing examples of textiles dating from the fifteenth to the nineteenth century, I will examine Wellesley College's pioneering efforts towards creating a collegiate museum that taught students with objects beyond traditional painting and sculpture.

Het Achterhuis: The Diary of Anne Frank Revisited (exhibition) Jewett Arts Center-Gallery

Danielle R. Ezor '13, Art History and Studio Art
ADVISOR: *Phyllis McGibbon, Art*

Anne Frank was immortalized through her diary, later published by her father as *The Diary of a Young Girl*, which detailed her experience as a Jew in hiding in Amsterdam. *Het Achterhuis*, as an altered version of Anne Frank's diary, highlights Anne's experience, in reaction to calls to ban the book because of its depressing content. This altered version of *The Diary of a Young Girl* includes digitally printed images and text, letterpress, sewing, guache paintings, cutouts, and linoleum prints all on a variety of different papers. The altered text block was bound in a new case with additional weight added in the covers in the form of copper plates. This exhibition will also include side projects associated with the altered book and the artist's personal experience with the Holocaust and remembrance art.

North Korea and the Female Figure: Painting in the Political and the Personal

(exhibition) Jewett Arts Center-Gallery

Christine Yeh Jin Oh '13, Studio Art

ADVISOR: *Bunny Harvey, Art*

Characterized by constant scheduling, studying, and social interactions, Wellesley's unique environment fosters a culture of self-actualization in which discovering and achieving our perceptions of success stands at the cornerstone. This project attempts to visually portray the flux between hope and despair, satisfaction and shame in the lives of Wellesley students. Beginning with a scheme to deconstruct unfounded preconceptions of beauty within the ideological realm of Wellesley, the artist realizes that her project scope must widen to include a topic representing her own dreams: expelling human rights violations in North Korea. Paintings of Wellesley women, nude, vulnerable, and on the brink of initiation into an unforgiving world, are juxtaposed against portraits of North Koreans, depicting the clash between our quests to solidify our self-images at Wellesley and North Korean refugees' struggle for survival and against injustice. Startling, bemusing, and unapologetically honest, this is an artist's undertaking to envelop and evolve her personal battles and convictions in her studio. (Research supported by a Pamela Daniels Fellowship.)

Process for Progress/ Proceso para Progreso: Realities of Artistic Process for Environmental Progress

(exhibition) Jewett Arts Center 452

Caitlin J. Greenhill '14, Studio Art and Art History

ADVISOR: *Bunny Harvey, Art*

The multimedia exhibition, Process for Progress/ Proceso para Progreso, juxtaposes traditional fine art with new media, colonial art methods with indigenous artistic traditions, and the process of creation with the product of the process to demystify artistic production and re-awaken environmental consciousness. The show features a digitally expressed evolution of the finished work, allowing viewers to experience the often-unrepresented aspect of visual expression. The large-scale multimedia paintings, the subjects of the digital documentation displayed, utilize a uniquely Central American and universally artistically relevant vocabulary to visually describe the precious rainforests of Central America and remind viewers of the epidemic of deforestation in the region. Process for Progress/

Proceso para Progreso endeavors to expose the elements involved in the realization of visual expression and to force viewers to confront the reality that is endangered by deforestation.

No Place like Here: A Collection of Poems

(literary reading) Jewett Arts Center 454

Jaya A. Stenquist '13, English and Creative Writing

ADVISOR: *Daniel Chiasson, English*

W. H. Auden wrote of Iceland, "this is an island and therefore Unreal." The mountains, the tides, the rising shoulder of a glacier, all present a landscape of high drama, which, situated between two continents, sits on the verge of violent collapse. These poems, written both in Iceland and Wellesley College, investigate the relationship between the individual and an overwhelming landscape, the relationship between internal and external geography, and the imaginary and tangible borders of the self. (Supported by a Wellesley Student Research Grant and NES Artist Residency)

Translation and Poetry: Defining Authorship through Practice

(literary reading) Jewett Arts Center 454

Arielle A. Concilio '13, English

ADVISOR: *Lawrence Rosenwald, English*

Translating poetry presents challenges distinct from other literary forms. Elements such as meter, rhyme, shape, or imagery combine to create meaning and sensations that the translator must communicate in the target language and reproduce in the reader. In this presentation, I will briefly discuss challenges in this process, the translator's role as both collaborator and creative writer, and how one defines this role through practice. I will then read selections from my translations of Octavio Paz's first edition of his first collection of poetry, *Libertad bajo palabra*.

Science and Technology

Cancer: Causes and Cures (short talks) Pendleton Hall West 116

Targeted Delivery of Boron-10-Loaded Peptide Polymers to Pancreatic Adenocarcinoma Cells Via Bioconjugated Gold Nanoparticles for Neutron Capture Therapy

Sara F. Althari '13, Biological Sciences

ADVISOR: *Andrew Webb, Biological Sciences*

Boron neutron capture therapy (BNCT) is a

binary therapy based on the nuclear fission reaction that occurs when the nonradioactive boron-10 (¹⁰B) isotope is irradiated with thermal neutrons to produce alpha particles and lithium-7 nuclei. The cytotoxic products of this reaction have a characteristic path length of a single cell diameter, making it an ideal selective therapeutic strategy. The therapeutic value of BNCT relies on the directed delivery of a sufficient concentration of ¹⁰B to tumor cells, avoiding normal tissue. To this end, we are using multifunctional nanovehicles for antibody-targeted delivery of ¹⁰B-enriched molecules to pancreatic adenocarcinoma cells for BNCT.

Development of an In Vivo Assay for Antibody-Conjugated Gold Nanoparticles (AuNPs) Targeted to Human Pancreatic Tumor Xenografts Using an Ex Ovo Avian Embryo Culture System

Ilana R. Pollack '13, Biological Sciences

ADVISOR: *Andrew Webb, Biological Sciences*

Pancreatic ductal adenocarcinoma (PDAC) is an aggressive disease with a poor prognosis. In order to effectively improve pancreatic cancer outcomes, a highly targeted therapeutic is necessary. An antibody-conjugated gold nanoparticle (AuNP) would provide such a therapeutic platform. Effective targeting of the nanoparticle is possible through the linkage of monoclonal antibodies to target key antigens highly expressed in cancerous tissue. Previous work using RT-PCR and Western blotting has established the high level expression of the transmembrane glycoprotein A33 (gpA33) in the CAPAN-2 PDAC cells and the absence of gpA33 in the BxPC-3 PDAC cells. This differential protein expression allows for an experimental setup in which uptake of AuNPs conjugated with anti-gpA33 antibodies between CAPAN-2 and BxPC-3 tumors can be quantified and compared in vivo. Using an ex ovo avian embryo culture, specific targeting of our current antibody-conjugated AuNP construct to CAPAN-2 xenografts has been demonstrated.

Metabolomic Basis of Metastasis: Warburg Effect in Molecular Oncology

Ashley J. Porras '14, Neuroscience

ADVISOR: *Martina Koniger, Biological Sciences*

Cancer cells synthesize large amounts of fatty acids and cholesterol allowing them to avert apoptosis and increase drug resistance. One key lipogenic alteration that commonly occurs in prostate cancer cells, the focus of my research at Dana-Farber Cancer Institute,

includes over-expression of the enzyme fatty acid synthase (FASN). FASN is a key metabolic enzyme that ultimately aids in converting carbon intake into fatty acids for storage. We are testing multiple small molecule inhibitors of FASN to target this pathway and use Western Blots to assess if the concentration of FASN that occur during prostate tumorigenesis and progression decrease.

Targeting Driving Mutations: Exploring Better Treatment Options for Childhood Acute Myeloid Leukemia

Camille E. Hamilton '13, Biological Sciences and French Cultural Studies

ADVISOR: *Yuichiro Suzuki, Biological Sciences*

My thesis explored the potential for finding better treatment options for childhood acute myeloid leukemia, or AML, by targeting the driver mutations that activate the cancer. Using an AML cell line known to contain two driver mutation, c-KIT and AML1-ETO, I used a group of drugs known to specifically impair the function of one or the other of the mutations. After confirming the efficacy of the drugs on their own, different combinations of drugs targeting each mutation were tested for any additive or synergistic effects. My findings indicate higher cell death rates of cancer cells with multiple drug combinations.

Engineering for Humanity: Helping Elders Age in Place through Partnerships for Healthy Living

(panel discussion) Science Center 104

Tamanna Ahmad '13, Masters of Business Administration (Babson), Lauren Froschauer '16, Mechanical Engineering (Olin), Hayley Hansson '16, Mechanical Engineering (Olin), Sean Karagianes '16, Mechanical Engineering (Olin), Kathryn Kenney '13, Anthropology, Jeremy Liu '13, Finance (Babson), Justin Poh '16, Mechanical Engineering (Olin), Shubhangini Prakash '13, Masters of Business Administration (Babson)

ADVISOR: *Caitrin Lynch (Olin), Anthropology*

Engineering for Humanity, an interdisciplinary engineering design and anthropology course, is a semester-long partnership between Three-College students and the Natick Council on Aging. Older community members were recruited to partner with students in a series of discovery, design, and community-building activities. Come hear Wellesley, Babson, and Olin students present results of the empathetic design process.

During the semester, students and their elder partners engaged in activities designed to create community and understanding. Next, students synthesized what they learned into project ideas, refining briefs into robust, targeted, and manageable projects through consultation with experts and co-design with elder partners. A series of standard design stages -- specification, prototyping, testing, refinement -- was accompanied by visits with partners for feedback and continued learning and community building. Shortly after the Ruhlman conference, partners will receive custom-designed artifacts intended to solve particular problems. (This Olin College class is supported by the Metrowest Health Foundation.)

Light Waves, Matter Waves, and Brain Waves (short talks) Pendleton Hall West 117 A Cool Way to Detect Gravity Waves

Lamiya B. Mowla '13, Astrophysics

ADVISOR: *Robert Berg, Physics*

Gravitational waves are distortions in the fabric of space-time caused by the acceleration of masses, such as rotating black hole binaries. Their existence was first predicted by Einstein in 1916, but they have yet to be detected because their predicted effects are extremely small. The Laser Interferometer Gravitational wave Observatory (LIGO) is attempting to detect cosmic gravitational waves. My experiment involves the design of the mirrors for the Third Generation LIGO. At the LIGO Lab at MIT, I am investigating the feasibility of using radiative cooling of silicon mirror substrates to 120 K to reduce thermal noise, which should greatly increase the sensitivity of the detector. I will also explore the effect of high emissivity coatings used in radiative cooling on the mechanical Q of the mirror, which is important because low mechanical damping is necessary for reducing fluctuations in the mirror positions.

The Effect of Gas Pressure on Ultraviolet Absorption of Sulfur Dioxide

Hannah E. Herde '14, Physics and Classical Civilization

ADVISOR: *Glenn Stark, Physics*

Sulfur dioxide, SO₂, is central to the study of early Earth's atmosphere, particularly the rise of oxygen. The rise of oxygen in the Earth's atmosphere is thought to be connected to sulfur isotopic signatures in the

Earth's rock record. As part of a long-term project conducted by Wellesley College's Professor Stark and collaborators on isotopic SO₂, we observed the effects of pressure on SO₂ ultraviolet absorption - so called "pressure-broadening." Using high resolution measurements from Synchrotron SOLEIL in St. Aubin, France, we quantified the pressure-broadening effect for atmospheric modeling purposes. The work was generously funded by NASA Planetary Atmospheres Program grant #NNX12AG61G.

Analysis of Rat P3 in Frontal and Parietal Lobes as a Possible Neural Correlate of Attention in Active and Passive Oddball Paradigms

Allicia O. Imada '13, Neuroscience

ADVISOR: *Michael Wiest, Neuroscience*

The P3 is a component of the average EEG response to sensory stimuli that is believed to reflect attentional and memory processing. Because the P3 response in humans is altered in a number of neurological disorders, it is important to understand its generators. To determine whether the rat brain shows an analogous P3 response with functionally distinct early and late subcomponents, we are recording frontal and parietal local field potentials from chronically implanted multi-electrode arrays, while rats are presented with tones in a passive condition or while they actively perform a simple auditory detection task. To the extent that rats and humans are similar in these processes, studies in the rat model could help us understand neural mechanisms of human attention.

Spectral Analysis of Local Field Potentials in Frontal and Parietal Cortex of Rats Behaving During a Sustained Attention Task

Caroline P. Dodge '13, Biological Sciences

ADVISOR: *Michael Wiest, Neuroscience*

At any given waking minute, we experience an informational overload. One of the ways we cope with the sizable influx of information is the process of selective attention. To investigate the neural correlates of attention, I have focused primarily on two EEG-like measures of attention that derive from neural oscillations, gamma-range power and coherence. To determine whether the rat brain shows increased gamma coherence and power during states of high attention analogous to human EEG studies, we have recorded local field potentials (LFPs) in the rat frontal and

parietal cortex with chronically implanted multi-electrode arrays while the rat performs an auditory detection task. To further characterize our spectral data, we correlated response latencies with evoked gamma power and inter-area coherence. Through LFP comparisons and coherence analysis we hope to help establish the rat as a model of attention and perception analogous to that of humans.

Sticky Situations: Social Stability and Problem-Solvings (short talks) Pendleton Hall East 139

Remembering the Imagined Personal Future: How Anxiety Influences Memory and Future Thinking

Yue Xing '13, Psychology

ADVISOR: *Margaret Keane, Psychology*

Researchers have discovered a close dynamic between our memory and our ability to imagine the future. People often draw materials from their personal past when they imagine a personal future event. Subsequently, these future events, encoded in their memory, may guide further guide their behaviors and moods. As recent research also found that people tend to remember positive future events better than negative ones, our study decides to investigate if participants with low vs. high anxiety-level differ in their ability to remember imagined future events. The implications of this study will provide insights into the interaction between episodic memory, future thinking ability, and anxiety.

Personality Stability in Late Life: Is Openness Plastic?

Katherine A. Smiley '14, History and Psychology

ADVISOR: *Paul Wink, Psychology*

Openness to new experiences tends to decrease in late life. But is this a foregone conclusion, or can openness increase? In a recent study, researchers explored the effect of internal control (i.e., the perception that the outcome of an event depends on their behavior) on the trajectory of openness in late life. Participants in the study were enrolled in a volunteer training program or were simply part of a volunteer discussion group. After the training program had been concluded, researchers found that individuals who were trained and had high internal control actually increased in openness. Additionally, this trend of increasing openness was found to have not only continued, but also shown the most significant change one year after the study had been completed. Join us as we use a nationally representative sample to

explore whether higher internal control really is the key to increasing openness in late life.

Using Imagined Interactions to Solve Social Dilemmas

Katrina A. Tarmidi '13, Economics and Psychology

ADVISOR: *Tracy Gleason, Psychology*

While going to class, college students may recall conversations they had with friends while anticipating what they will say for future encounters. These daydreams are called imagined interactions (IIs), which serve as an important social cognition tool and have a variety of functions including enhancing relationships and managing conflict. My specific research question attempts to answer whether using IIs will help adults facing a social dilemma make more thoughtful decisions than those who don't use IIs. The results of this study will provide interesting insights and build on a growing body of research on IIs.

Technology in Biology: Utilizing Innovative Interactions to Foster Collaborative Learning in Biology

(on location presentation) Science Center 173

Linda Ding '14, Computer Science, Taili Feng '13, Computer Science, Michelle N. Ferreinae '13, Computer Science, Casey E. Grote '14, Computer Science, Veronica J. Lin '15, Economics and Computer Science, Sirui Liu '13, Biological Sciences, Kara Y. Lu '14, Biological Sciences, Kelsey L. Tempel '13, Computer Science, Wendy M. Xu '13, Media Arts and Sciences

ADVISOR: *Orit Shaer, Computer Science*

The Wellesley Human-Computer Interaction (HCI) Lab is dedicated to innovation and investigation of next generation technology. Throughout the summer and fall semester, student researchers in the lab have developed software suites to enhance collaborative, inquiry based learning in Biology. This presentation will focus on the design, implementation, and evaluation of four research projects: GreenTouch, a collaborative environment for engaging novices in scientific inquiry; MoClo, a multitouch interface for biological design; SynFlo, an interactive installation for exposing non-scientists to basic synthetic biology concepts; and lastly SynBio Search, a semantic search engine for synthetic biology research. (Research supported by National Science Foundation and HHMI).

POSTER SESSION

Science Center Focus

A Systematic Study of the Chemical Stress Response Induced by Bleach And Vinegar in E. Coli on Viability and Protein Expression Profiles Using Plating Assays And Matrix-Assisted Laser Desorption Ionization (MALDI) Biotyper™ System

Serena Liu '13, Biological Chemistry

ADVISOR: *Didem Vardar-Ulu, Chemistry*

Bacterial water contamination is a serious global public health problem. While the contamination frequently originates at the water source, water storage conditions can heavily exacerbate the health risk. Here, we present our systematic study of the effects of two ordinary household chemicals, bleach and vinegar, on E.coli viability and protein expression profiles, as a function of chemical concentration, and incubation temperature. Matrix-assisted Laser Desorption Ionization (MALDI) Biotyper was used to compare the unique molecular fingerprint of E.coli subjected to multiple chemical stress conditions and harvested at different time points.

The Bronze Age Cemetery from Hapria, Romania

Jenna M. Watson '13, Anthropology

ADVISOR: *Adam Van Arsdale, Anthropology*

This poster examines 27 Bronze Age human skeletons of the cultural group Livezile from the sight of Hapria, Romania dating between 2900-2400 BC. The Livezile were located in the western branch of the Carpathian Mountains (Apuseni Mountains) in Transylvania, Romania. My analysis of the remains aimed to determine age, sex, and identify pathology. Skeletal analysis indicates an age range from infants to adults in their 40's. The most common disease present was Degenerative Joint Disease (DJD) with 10 of the 27 (37%) individuals affected. Of the 10 skeletons exhibiting DJD seven (70%) were at least 30, but no older than 50. One case of trauma was present. A male skeleton displayed a possibly fatal oblique cut mark on the left medial calcaneus. Skeletal analysis of disease and trauma can help us to better understand the cultural and physical changes communities from the Apuseni Mountains in Transylvania experienced over their existence.

Simple Structure, Entity Theory, and the Formation of Cognitive Barriers when Processing Mathematical Complexity

Sierra Sarnataro-Smart, Senior Davis Scholar, Psychology

ADVISOR: *Beth Hennessey, Psychology*

Previous research has focused on the indiscriminately broad categorical thinking that underpins social stereotyping and prejudice. This study extended the exploration of maladaptive modes of cognitive processing to non-social realms. It was hypothesized that for individuals with mathematics anxiety, inappropriately broad categorical thinking may serve as a barrier to processing complex mathematical concepts. In addition, this investigation measured the extent to which participants' implicit assumptions about the origins of math intelligence covary with the tendency to employ simplified categorical thinking in mathematical realms. Study findings have the potential to inform our understanding of the specific cognitive responses to complexity that may underlie barriers to mathematical comprehension and fluency. (Research supported by the Office of the Provost and Dean of the College, as well as the Department of Psychology)

Modeling Stroke in Newborn Mice

Mehwish A. Mirza '15, Undeclared

ADVISOR: *Adele Wolfson, Chemistry*

Neonatal stroke is a major cause of infant death and permanent neuropsychological injury. Recently, the early response gene "verge" has been identified as highly active in the adult mouse brain post-stroke and during angiogenesis, the development of blood vessels. Verge mRNA expression increases threefold in the affected hemisphere of mice. In this study, 10-day-old mice with the verge gene (wild-type) and those without (knock-out) were used as a model of the human infant to test the hypothesis that verge improves stroke outcomes and angiogenesis in the ipsilateral hemisphere. Immunofluorescence studies were conducted to measure expression of CD105, an angiogenesis marker, and cresyl violet staining was performed to measure brain atrophy at different time points post-stroke. Verge knock-out brains retained a cyst while wild type brains experienced less damage, suggesting that verge serves as a neuroprotective agent in stroke. (Research supported by the University of Connecticut Health Center)

Signaling Mechanisms and Physical Structure of Biofilm Growth in *Synechocystis* sp. Strain PCC 6803

Jennifer E. Fishbein '13, Biological Chemistry

ADVISOR: *Mary Allen, Faculty emerita*

Many bacterial species, including the cyanobacterium *Synechocystis* sp. Strain PCC 6803, use the formation of biofilms as a survival mechanism. Biofilms are cell aggregates, which act as a protective barrier by providing nutrient access, increased drug tolerance and metabolic by-product sharing. Biofilms can form both in nature and in human infections, where they are very antibiotic resistant and thus particularly difficult to treat. To form biofilms, many bacterial species use a communication system involving chemical signals. In this study, we investigate the cell-cell communication of this cyanobacterium. The physical structure of the biofilms is also being analyzed. The wild type non-motile cells form a uniform monolayer biofilm while the super-motile mutant cells form pillar shaped biofilms that spread across the surface. Our goal is to gain a better understanding of this ubiquitous and diverse bacterial survival strategy. (Research supported by a Jerome A. Schiff Fellowship).

Biofilms and Light Signaling in *Synechocystis* sp. Strain PCC6803

Ziban Dong '13, Biological Chemistry and Psychology

ADVISOR: *Mary Allen, Faculty emerita*

Biofilms are how bacteria naturally exist in nature--enclosed in an extracellular matrix of protein and polysaccharides. The biofilm state protects bacteria against environmental stressors, such as antibiotics and biocides. Confocal microscopy was used to analyze the development of biofilms of two strains of *Synechocystis* sp. strain 6803, a wildtype and motile mutant, which were grown in flow cells. A significant difference was found in terms of their biofilm structures and growth, with wildtype biofilms being lower in height and not exhibiting dense clusters compared to the motile strain. The genomes of both strains were sequenced and then characterized for genetic differences. We also explored the ability of the motile mutant to move towards light, known as positive phototaxis. Our goal was to find the physical conditions required for maximal positive phototaxis in the motile strain.

Rejuvenation of a Cesium-Based Dispenser Photocathode in Response to Atmospheric Contamination

Alexandra L. Day '15, Physics

ADVISOR: *Robert Berg, Physics*

Photocathodes produce high-energy electron beams that are well suited for use in free electron lasers (FELs). This project describes work to study and improve the quantum efficiency of cesium-based photocathodes for use in ship-based missile defense FELs. Particular emphasis is placed on quantifying the ability of a hybrid dispenser photocathode to recover from intentional atmospheric contamination. External and internal cesium deposition methods were studied throughout the project, as were the effects of different temperatures and pressures. The results of this project clarify the tolerance of certain photocathodes to intentional contamination and describe the related effects on quantum efficiency. (This project was supported by the NSF, DOE, and ONR.)

Become Your Own Superhero: Effects of Self-Transformation on Executive Functioning

Karina K. Chung '13, Psychology, Aryanne D. de Silva '13, Psychology

ADVISOR: *Tracy Gleason, Psychology*

Our study examines whether self-transformation through pretend play can improve preschoolers' performance on executive functioning tasks. Karniol et al. (2011) described the process of self-transformation as the mechanism through which children adopt the qualities of the character they are pretending to be. In our study, children were presented with a cape to wear. For some children, the cape was described as just part of the games, while for other children, the cape was described as having special powers that help children do well on the games being played. Children in the study then played three executive functioning games (e.g., Simon Says) that tested their impulse control and mental flexibility. We also investigated a number of additional factors including the influence of age, type of executive functioning task, and type of feedback (e.g., neutral or positive).

Effect of Saturation and Stereochemistry on the Biological Activity of a Novel Series of Coumarin Derivatives as Promising Pancreatic Cancer Therapeutics

Alyssa Bacay '14, Biological Chemistry, Christine Chun '15, Undeclared, Maria Jun '14, Chemistry

ADVISOR: *Dora Carrico-Moniz, Chemistry*

Pancreatic cancer metastasizes early and is very difficult to diagnose in its early stages, making it one of the deadliest cancers. In 2006, a coumarin-based natural product, angelmarin, was isolated from the Japanese medicinal plant *Angelica pubescens* and was found to exhibit cytotoxicity against PANC-1 cells under nutrient-deprived conditions. Using the core structure of angelmarin as a scaffold, structure-activity relationship (SAR) studies were conducted and a novel geranylgeranylated coumarin-derivative was discovered as a promising new lead structure for the development of pancreatic anticancer agents. The effects of stereochemistry and saturation of the isoprenyl tail on cytotoxicity against PANC-1 cells will be presented.

Protease Sensitivity Map of the Highly Structured Heterodimerization Domain (HD) of the Human Notch 2 Receptor in the Presence and Absence of the Furin Cleavage Loop

Kimberly S. Cabral '13 Spanish, Catherine Y. Cheng, Post-Baccalaureate Fellow, Biological Chemistry, Aliya R. Khan '15, Undeclared

ADVISOR: *Didem Vardar-Ulu*

About 50% of human cases of T-cell Acute Lymphoblastic Leukemia show activating mutations that map to a specific address inside a single protein: the core of the Heterodimerization Domain (HD) of the Human Notch1 receptor protein. Notch receptors are an essential part of a highly conserved signaling pathway that regulates cell fate decisions. Aberrant Notch signaling is associated with a multitude of diseases including many types of cancers. Normal activation of the receptor depends on a tightly regulated proteolytic cleavage within its HD. Through limited proteolysis with trypsin and chymotrypsin followed by Matrix-assisted Laser Desorption Ionization-Time of Flight peptide mass fingerprinting, and C18 reverse phase High Performance Liquid Chromatography, we mapped the protease accessibility of specific sites within the human Notch2 HD in the presence

and absence of the unstructured loop and compared it to their predicted accessibilities based on current structural information. (Supported by the NIH and NCI)

Looking for Exoplanets

Kerrin M. Arnold '13, Classical Civilization and Astronomy

ADVISOR: *Kim McLeod, Astronomy*

I contributed to the KELT-North project to help find exoplanets using the transit method. The KELT-North team has surveyed thousands of stars, analyzed their light curves, and picked out candidate stars most likely to have a transiting exoplanet. Here I describe why the KELT project needs data from telescopes like Wellesley's 24" and how I conducted observations of several candidates, reduced the data using Python programs, and analyzed light curves. By the end of the semester we submitted observations of 7 stars observed over 12 nights to the KELT team.

Design and Synthesis of a Novel Series of Isoprenylated Coumarins as Potential Anti-Pancreatic Cancer Agents

Alyssa Bacay '14, Biological Chemistry and Maria Jun '14, Chemistry

ADVISOR: *Dora Carrico-Moniz, Chemistry*

The Japanese medicinal plant *Angelica pubescens* is a source of the natural product angelmarin, which was found to have promising activity against pancreatic adenocarcinoma cells under nutrient-deprived conditions. Based on the core coumarin structure of angelmarin, several series of novel isoprenylated coumarin compounds were designed and synthesized in order to study the effect of isoprenyl chain length and substitution position on the cytotoxic activity of the compound. The synthesis, purification methods, and characterization of the complete series of compounds will be presented.

Raging Hormones of the 'Teenage' Flour Beetle: Mechanisms of Metamorphosis Regulation in *Tribolium castaneum*

Leila Chaieb '13, Biological Sciences and Middle Eastern Studies, Amy Ko '14, Biological Sciences

ADVISOR: *Yuichiro Suzuki, Biological Sciences*

The regulation of the timing of developmental transitions, such as metamorphosis and puberty, is poorly understood. POU domain transcription factors have been associated with the regulation of endocrine changes

associated with the onset of puberty. To see if the POU transcription factor Ventral vein lacking (Vvl) plays a role in insect metamorphosis, Vvl was silenced in the flour beetle *Tribolium castaneum*. Silencing Vvl expression resulted in precocious metamorphosis and a reduction in kruppel homolog 1 (kr-h1), a target of the key insect metamorphosis regulator Juvenile hormone (JH). However, topical application of JH on Vvl knockdown larvae delayed the onset of metamorphosis and rescued the normal expression of kr-h1. Since the expression of JH acid methyltransferase, a JH biosynthesis enzyme, also decreased with vvl knockdown, Vvl likely regulates JH levels. Thus, POU factors may play a role in regulating the timing of developmental transitions in both vertebrates and insects.

Biological Evaluation of a Novel Series of Isoprenylated Coumarins as Promising Pancreatic Cancer Therapies

Alyssa Bacay '14, Biological Chemistry and Maria Jun '14, Chemistry

ADVISOR: *Dora Carrico-Moniz, Chemistry*

Angelmarin, a coumarin-based compound, is a natural product that was isolated from the root of the Japanese medicinal plant *Angelica pubescens*, and has been found to display promising activity against the pancreatic adenocarcinoma cell line PANC-1. Given this compound's potential as a pancreatic anticancer agent, structure-activity relationship (SAR) studies have been initiated to discover more effective analogs and to identify the compound's molecular target. These initial SAR studies led to the discovery of a novel geranylgeranylated ether coumarin derivative as a new lead structure. Cytotoxicity data for a novel lead series against PANC-1 cells under nutrient-rich and nutrient-deprived conditions will be presented. This project was done in collaboration with Professor Andrew Webb, Biology. (Research supported by the Roberta Day Staley and Karl A. Staley Funds for Cancer-Related Research and the Jean Dreyfus Boissevain Lectureship for Undergraduate Institutions.)

Task-related Activity of Neurons in Rat Cortex During Active Auditory Detection

Kaitlin S. Bohon '14, Neuroscience

ADVISOR: *Michael Wiest, Neuroscience*

Despite the advances made in neuroscience within the past century, the neural mechanisms that underlie conscious perception are still unknown. In order to begin addressing this complex problem we recorded action

potentials from multiple sites in the medio-dorsal frontal cortex and posterior parietal cortex of rats while they performed an auditory detection task. We then analyzed the multi-unit spiking data in order to parse out neural correlates of task performance, including detection of the target stimulus. Our preliminary results suggest that the activity of a minority of neurons in both areas signal the presence of the auditory target stimulus.

Extracellular Thimet Oligopeptidase is Carried by Cell Membrane Microvesicles of Prostate Cancer Cells

Yu Liu '13, Biological Chemistry

ADVISOR: *Adele Wolfson, Chemistry*

Peptidases are enzymes essential to the physiological generation and regulation of bioactive peptide signals, which mediate intercellular communication in multicellular organisms. Because the processing of peptide precursors occurs both inside and outside the cell, many peptidases must exist intracellularly and extracellularly to fully modulate their peptide substrates. The peptidase enzyme thimet oligopeptidase (TOP) has been localized on the plasma membrane outer surface and in the supernatant of cell cultures. Recent studies highlight the significance of microvesicles (MVs), plasma membrane bleb formations, as extracellular carriers of membrane-associated molecules (i.e. proteins) upon dissociation from the parental cell. We asked whether extracellular TOP is carried by cellular MVs. Western blot analysis revealed that TOP protein is indeed carried by the cellular MVs of androgen sensitive prostate cancer cells. Additionally, treating these cells with a calcium-ionophore (a compound that allows Ca²⁺ to enter cells) induced dose-dependent increase in MV release and extracellular MV-associated TOP expression.

Social Sciences

Community Building

(short talks) Pendleton Hall East 239

IN(VISIBILITY): The Impluvium Installation

Eliana R. Blaine '13, Environmental Studies

ADVISOR: *Phyllis McGibbon, Art*

This semester long project considered the physical reality and visual potential of everyday campus waste, culminating in the creation of a temporary site-built installation in the Wang Campus Center's

Impluvium. The primary material? Plastic water bottles. Working closely with the student organization Wellesley Energy and Environmental Defense, visiting artist Willie Cole, and many members of the campus community (Patrick Willoughby, Phyllis McGibbon, John Olmsted, Lynne Payson and others), the project showed me the potential of experimental art-making as public intervention. Working on this project shifted my engagement with people as well as materials on campus; I found possibilities in re-working the materials and my expectations for the piece- both physically and socially. Ultimately, the project's formation depended upon imaginative freedom, spontaneity, trust, collaboration and gift ideology. The relationships and community ties formed were invaluable to realize the installation, and also to understand the inherent creative tension between *process* and *product*.

Moving out into the World: Community Writing and Impact

Mona I. Elminyawi '14, English

ADVISOR: *James Wallenstein, English*

Barack Obama said that when he went into community organizing in Chicago's South Side, he "didn't know what he was doing." He said that the work that he did in those communities changed him more than the communities changed him. Last semester I took on a volunteer position that allowed me to write about and study community based activism, both its implications and impact. I volunteered at 826 Boston in Roxbury in conjunction with my writing class at Wellesley, "Writing and Action." 826 Boston is a non-profit organization in Roxbury that aims to empower youth by providing them with mentorship and the tools of writing. As an after school tutor I worked with students on homework and creative writing assignments. Back at Wellesley I was forced to consider the intersections of my position as a student, writer, tutor, and member of multiple diverse communities. Other questions that came up: how can creative writing be a mirror or distorter of communities and its individuals? How does writing about communities manage to transcend and blur distinctions between genres? What does it mean to be engaged? What is my impact as an individual going into this community? What were my actual contributions?

Letting The Elderly Speak: Stories of Physical and Mental Well-being in the Aging Population

Jane Qu '13, Neuroscience

ADVISOR: *Michele Respaut, Faculty emerita*

"Literature and Medicine" CPLT 334 is a course that intersects the power of medicine with the power of words. Inspired from my experiences volunteering on the Biography Project at a nursing home, my final project focused on the elderly population and combined creative writing and research. Greater involvement in elderly well-being has become crucial given the projected increase of this age group in our population. My talk highlights the stories and thoughts of nursing home residents across different countries, delving not only into their past experiences and memories, but also into the physical and emotional concerns that come with aging.

Boston Cafés: A Connection to City Life

Megan N. Turchi '13, American Studies

ADVISOR: *Kathleen Brogan, English*

Cafés in Boston represent more than just places where one quickly stops to get his or her morning coffee. The diversity seen through Boston's many distinct neighborhoods is portrayed through the atmosphere and ambiance witnessed in cafés. Through the observation of the type of coffee and food sold, customers, physical layout, employees, and ambiance, cafés seem to create an atmosphere of familiarity and comfort for their customers. After observing Crema Café in Harvard Square, Trident Books in Back Bay, and Caffè dello Sport in the North End, it appears that these cafés establish neighborhood specific cultural codes, in order to turn an otherwise public space into a more private setting pertaining to the customers' needs. City dwellers use these cultural codes to feel a sense of belonging in their own neighborhood, so they can better relate to Boston as a whole.

Daniels Fellows

(short talks) Jewett Arts Center 450

An Investigation of the Feasibility and Progress of the Millennium Development Goals in the Kingdom of Swaziland: A Case Study.

Andrea D. Kine '13, Africana Studies

ADVISOR: *Filomina Steady, Africana Studies*

The United Nations has established Millennium Development Goals (MDGs) in 2000, as a benchmark for developing nations, with targeted achievement of these goals by 2015 for participating governments. This

research aims to understand the position of Swaziland in achieving the eight MDGs, with a special emphasis placed on women. National and UN Development Reports will be analyzed to assess Swaziland's development progress through the lenses of the reporting agencies. Interviews will be conducted with top government officials representing ministries of relevance, and also with local leaders and NGOs who will share perspectives on local progress. Interviews with Swazi women will enable a closer look beyond the statistics presented by government data, through stories that figures and graphs fail to represent.

(Project supported by a Daniels Fellowship)

Outside the Literal House: Staging Euripides' Orestes

Megan S. Wilson '13, Classics and Comparative Literature

ADVISOR: *Carol Dougherty, Classical Studies*

My senior thesis grapples with the issues raised in Euripides' *Orestes* by staging it for a modern audience. The play engages with Aeschylus' *Agamemnon*; it is concerned with the same themes but gives them a radically different treatment. Euripides empties the Aeschylean 'house' of its symbolic content, traditionally the aristocratic family. Accordingly, Euripides' language is more concrete than Aeschylus', and his plot is driven by exterior rather than interior events. I bring out both qualities in my production of *Orestes*, which I staged in an original translation in April. The performance manifests onstage the most challenging aspects of Euripides' text and argues for the play's departure from tragic convention by staging the absence of an interior and employing the 'unreliable narrator' technique as a proxy for Euripides' play with genre. It also includes musical and scenic effects designed to bring the Greek tragic stage to a modern audience.

(Project supported by a Daniels Fellowship)

Creating a Passive Refrigerator: Reducing Energy, Reusing Waste, Recycling the Ice House Concept

Carly L. Gayle '13, Environmental Studies, Benjamin Chapman '14, Mechanical Engineering (Olin)

ADVISOR: *Monica Higgins, Environmental Studies and Jessica Townsend, Mechanical Engineering (Olin)*

This project involved the design, modeling, and construction of a walk-in refrigerator that uses less electricity than a light bulb and costs

less than \$1000 in materials. The refrigerator occupies a 12 by 8 foot room in the basement of the farmhouse at Medway Community Farm. The system freezes 3000 kg of water, held in 2-liter soda bottles, during the winter. That ice, along with thick insulation made of shredded Styrofoam, keeps the refrigerator cool for the rest of the year. A life cycle assessment shows that this passive refrigerator consumes less than one percent of the energy of a comparable commercial model. This method shows great promise for adaptation into a wide variety of refrigeration and air conditioning systems, which currently consume 12% of the electricity used in the U.S.A.

(Project supported by a Daniels Fellowship)

Know Nothing of Other Languages, Know Nothing of One's Own

(short talks) *Science Center 396*

Language and Secession: The Relationship Between Language Attitudes and Nationalist Ideology in Quebec

Laura M. Dulude '13, Cognitive & Linguistic Sciences

ADVISOR: *Andrea Levitt, French*

Nationalism has been brewing in Quebec since the birth of Canada, and separatism has been a popular ideology in the province since the 1960s. Quebec is the only monolingual French-speaking province in a largely English-speaking Canada. As such, the issues of language identity and attitudes play an important role in Quebec's relationship with the rest of Canada, whether that relationship be harmonious or discordant. Using a survey of young and old inhabitants of Quebec, I explore issues of separatism and nationalism in the Belle Province as they relate to demographic factors and language attitudes.

The Choice of Language Class and One's Personality

Eriko Houlette, Senior Davis Scholar, Psychology

ADVISOR: *Julie Norem, Psychology*

A famous Czechoslovakia proverb from says, "Learn a new language and get a new soul." Such proverb seems to suggest that there is a strong relation between languages and one's personhood. The relation of college students' personality and their choice of language class were investigated in this study. The data was collected from among the students in Japanese, Spanish and German classes using questionnaires which measured student's extroversion, shyness, sensory-processing sensitivity, rich

inner life, concern for appropriateness, reasons for choosing the particular language, likes and dislikes of the language and choosing adjectives which reflect the relation between personality and the language. The result showed statistically significant difference in the mean score for the extroversion among the language classes. Overall, the students indicated that they are comfortable in their choice of language, implying that they chose the language that matched their personality.

Language Use and the Fraternity House: Communication and Brotherhood

Amanda A. Coronado '14, Anthropology

ADVISOR: *Elizabeth Falconi, Anthropology*

In the context of the MIT Fraternity, Theta Delta Chi, discursive content and communicative events determine the particular ways in which the brothers build speech communities. Though predominately Hispanic, and Spanish speaking, the men of TDC come from various areas globally to form a brotherhood built upon friendship and dedication to success at MIT. It is in this unique environment that the brothers are given a sense of flexibility in terms of language use, choice and practices. In this study, I outline these language practices as the brothers work to build successful speech networks, or webs of personal relationships, in and outside of the fraternity house.

Investigating the Relationship between Age of Acquisition of a Second Language and Lexical Retrieval Ability in Bilinguals

Andrea A. Takahesu Tabori '13, Psychology and Religion

ADVISOR: *Jennie Pyers, Psychology*

Research suggests that bilinguals who acquired their second language early in childhood have an enhanced cognitive ability to inhibit, which may give them an advantage in lexical retrieval relative to later bilinguals. The current study investigates the relationship between age of acquisition of a second language and the lexical retrieval ability in bilinguals by comparing the lexical retrieval ability of 30 English monolinguals, 30 early Spanish-English bilinguals who acquired English by age three, and 30 late Spanish-English bilinguals who acquired English between ages four and six. The three groups were matched on non-verbal intelligence and vocabulary size was statistically controlled. (Research supported by Psychology Department and Office of the Provost and Dean of the College Research Grant)

**Maladies sans Frontières:
Global Health Problems**
(short talks) Science Center 278

**The Growing Burden of Breast
Cancer in the Global South: An
Interdisciplinary Approach**

*Brianna D. Krong '15, Political Science and
Peace & Justice Studies*

ADVISOR: *Catia Confortini, Peace Studies*

Breast cancer is the leading cause of cancer mortality among women. As life expectancy in low-income countries increases, the global cancer burden is shifting to populations in the Global South, which experience disproportionate rates of mortality. However, only a small fraction of global cancer spending is allocated towards these most vulnerable populations. Paying special attention to breast cancer, I am compiling the current literature on cancer in low-income countries, drawing from the fields of global public health, international political economy, and medical anthropology and sociology. It is my hope that this work will help facilitate an understanding of how the factors contributing to cancer's increasing global burden relate to transnational processes including resource allocation, environmental regulations, and hazardous waste disposal. (Research supported by the Sophomore Early Research Program)

**The Impact of Private Sector Pricing
Policy on Health Care: Evidence from
Walmart's \$4 Prescription Program**

You Wang '13, Economics

ADVISOR: *Robin McKnight, Economics*

In 2006, Walmart launched a program that cut prices of nearly 300 generic prescription drugs to \$4 per prescription for a month's supply. This is a nation-wide program and is available to people with or without insurance. My thesis research examines the impact of a private firm's pricing policy on health spending behavior, health utilization and health outcomes.

**Cancer in Africa: Brief Background,
Current Challenges, Future Fixes**

*Sylvia K. Ilabuka '13, Environmental Studies
and Sociology*

ADVISOR: *Anastasia Karakasidou,
Anthropology*

Over recent years, the incidences of and deaths from cancer in Africa have been on the rise. Where infectious disease has been the bane of the continent for the longest time, cancer and other chronic diseases are rapidly taking over and are set to become the leading burden in

the not-too-distant future. While it is practically impossible to comprehensively address this topic in such a brief amount of time, this presentation will draw upon literary research to enlighten attendees on the place of cancer among chronic diseases in African countries.

(Supported by the Barbara Peterson Ruhlman '54 Fund)

**Global Commerce in Flux: How
the World is Changing China and
China is Changing the World**
(panel discussion) Founders Hall 126

*Connie C. Shen '14, Economics, Xue Wu '13,
Economics, Shuang Yin '16, Undeclared*

ADVISOR: *C. Pat Giersch, History*

Over the last three decades China has emerged as a global economic power with unparalleled growth and development. As foreign firms have set their sights on China, Chinese corporations have set their sights on the world. In this presentation, we examine the domestic and international avenues of China's economic development and success from the perspective of the foreign firm in China and the Chinese firm abroad. First, we will investigate how foreign businesses have entered, developed and begun to thrive in China by assessing changes in government policy and localization strategies. Second, we will provide a deeper look at the performance and infrastructure of China's national champion firms in global markets by analyzing the infrastructure and business strategies adopted by these major enterprises. Through examining China's role in the global economy in the past and present, we seek to provide a more complete narrative of its potential future.

**Perspectives on Social
Issues III: Research from the
Wellesley College Freedom
Project**

(panel discussion) Pendleton Hall
West 212

*Maria A. Brusco '14, Philosophy and
Economics, Beba Cibralic '16, Undeclared,
Amy N. Wickett '16, Undeclared*

ADVISOR: *Thomas Cushman, Sociology*

Are prescription-only drugs a violation of an individual's freedom to choose? Does making some drugs available by prescription only unjustly limit a person's bodily agency? Requiring prescriptions may protect people from wrongly using drugs they do not understand and that could potentially harm them, but this prac-

tice also limits an individual's power over her own body. People are legally able to take risks with their bodies and treat them as they please in many other aspects of life. Some philosophers ask: why shouldn't people also be allowed to take pharmaceutical risks with their bodies? In this presentation, we will discuss philosophy of the body with respect to prescription drugs, recreational drugs, and performance-enhancing drugs and whether regulation over their sale is a threat to liberty. Drawing on the theories of Jessica Flanigan, a leading philosopher in this debate, we will discuss the issue of ownership of the body, the role of government in an individual's health decisions, and the consequences for liberty and freedom.

Gender and Cultural Production
(panel discussion) Science Center 277

**Women Do it Best: An Analysis on
Representation of Black Female Bodies
in Rap Music Videos**

*Asia Sims '14, Women's and Gender Studies
and Africana Studies*

ADVISORS: *Irene Mata and Rosanna Hertz,
Women's & Gender Studies*

What does rap music look and sound like once it has been queered? My research offers answers to this question through an examination of the representation of race, gender, and sexuality of the Black female body in popular rap music. The first half of my research focuses on Sir Mix-A-Lot's infamous "Baby Got Back" music video and the contemporary queered version of this music video performed by African American artist, Ayanah Moor. I argue Sir Mix-A-Lot's version represents Black female excess in a negative way in contrast to Ayanah's version that represents the simplicity of black female beauty. After identifying what I (literally) consider the black and white areas of representation, I delve into a further analysis of the gray area located between the overt objectification and covert celebration of the Black female body. I turn to the work of a transgender rapper, Big Freedia, and her "Sissy Bounce" music.

**Tambien las Mujeres Pueden:
Women in Narco-Corridos**

Yesenia Trujillo '14, Computer Science

ADVISORS: *Irene Mata and Rosanna Hertz,
Women's & Gender Studies*

Throughout history, poor and the marginalized groups have found through folk songs ways to recreate, represent, and celebrate the actions of men and women that, while labeled as deviant

or criminal, convey hopes for social change and community justice. Narco-corridos, a musical style popular throughout Northern Mexico, are ballads that describe people's involvement in drug trafficking activities. The majority of the scholarly work on narco-corridos has focused on the study of male characters, ignoring or mentioning women only in passing. This presentation will discuss the roles women play in drug trafficking and the roles that have been constructed for them in narco-corridos over time

The Sum of My Parts (and Some of My Parts): Exploration of Memory, Gender and Self-Narratives in a Zine

Emily F. Gamber '14, Women's and Gender Studies and American Studies

ADVISORS: *Irene Mata and Rosanna Hertz, Women's & Gender Studies*

Zines can be powerful medium for self-narratives. Self-published and creator-distributed, they can break the molds of traditional publishing and make room for creative tellings of marginalized stories. In a final project for Crossing the Border(s), a Chicana/Latina theory and literature class, students were challenged to create their own self-narratives. Starting by positioning myself within the discourse of feminist and queer scholarship, I specifically consider the work of Chicana feminist poet, writer, and cultural theorist, Gloria Anzaldúa. This zine explores the construction of memory through complex family history and memory's function in the creation of self. It focuses on the creation of solidarity ideologies through experience and identity, and its material manifestations. Finally, it considers the act of writing as the theorizing work necessary for survival in the margins.

Why Hip-Hop is Queer: Using Queer Theory to Examine Identity Formation in Rap Music

Silvia Galis-Menendez '13, Women's & Gender Studies

ADVISORS: *Irene Mata and Rosanna Hertz, Women's & Gender Studies*

Although many believe hip-hop is irredeemably misogynistic and homophobic, hip-hop actually provides a unique space for queer interpretations of identity. Rap music is a poetics and a politics in which construction of oppositional narratives and presentation and performances of race, gender, and sexuality is possible. The works of hip hop artists Azealia Banks, Frank Ocean, Las Krudas, and Big Freedia particularly illuminate the processes of identity formation

and presentation. Using queerness to examine hip-hop, and using hip-hop to examine queerness demonstrates the significance of hip-hop as a cultural production and social movement.

POSTER SESSION Science Center Focus

Consumer Society

Clara M. Kabng '13, Economics, Jean H. Lee '13, Sociology, Sia Smith-Miyazaki '13, Sociology

ADVISOR: *Markella Rutherford, Sociology*

Fall semester we were challenged to rethink the things that we consume. We each chose a particular commodity, a category of consumer goods, or a particular consumer practice and conducted a sociological analysis of it. Our posters are of the commodification of vacations, the Super Bowl, and poverty. When pursuing our analysis we considered a variety of questions including: How is this commodity consumed? What are the messages tied to this commodity? What roles does this commodity play in the construction and display of individual identity? What role does the commodity play in marking socioeconomic class boundaries?

A Veiled Threat? Scarves and Secularism in the Turkish Republic

Rebecca P. Lucas '14, Political Science and Religion

ADVISOR: *Edward Silver, Religion*

Turkey has been lauded in the West as an exemplary country where Islam and democracy coexist within the framework of a secular government. Recently, however, citizens and politicians alike have challenged the restrictions placed on religious practice, most visibly in the ongoing "headscarf debate". The debate concerns laws banning religious symbols from government space, including the headscarves common in traditional Turkish culture and among observant Muslim women. Because the ban encompasses the legislature and public universities, it forces women to choose between their religious beliefs and their education or political involvement. Many argue this violates their freedom of religion, and is detrimental to democracy; others argue that the ban and similar restrictions are the only way to preserve the secular Republic. The headscarf debate is part of a dialogue that may determine the future of secularism in Turkey.

Humanities

Literary Expressions from Wood to Clay

(short talks) Pendleton Hall East 239

Hemingway and the Accidental Art of Journalism

Sara M. Simon '13 English

ADVISOR: *William Cain, English*

In his late teens and early twenties, Ernest Hemingway began his professional writing career with newspaper articles for the Kansas City Star and the Toronto Star. These were no minor jobs; for the Toronto Star alone, Hemingway wrote 172 pieces. For decades, scholars have identified this early work in journalism as a significant training experience that influenced Hemingway's creative writing. My thesis project takes this point an important step further. Through a collection of close readings, I argue that Hemingway's early short stories and novels can only be fully appreciated and understood through a detailed examination of his journalism.

Revelatory Words and Images: William Blake and the Artist's Book

Rusi Li '13, English

ADVISOR: *Alison Hickey, English*

Merging literature and visual art, artist's books reveal the fascinating experiment between word and image. The works of the Romantic poet, printer, and visionary William Blake invite exploration of this relationship. Blake's illustrations in *Songs of Innocence and Experience*, revelatory in themselves, often subtly undercut or complicate the meanings of his writings, offering a complex view of the songs as both literary creations and material objects. Blake conceived the medium of the book as an ideal vehicle that, marrying text and image, had the power to join the author and the reading public. In addition to interpreting Blake's poems, I examine his books as material objects, paying special attention to the relation of text and image. With Blake's powerful example in mind, I proceed to examine contemporary "artist's books" in order to gain insights into the continuing evolution of the book form.

Reflections on the Afterlife: Fra Girolamo Savonarola's Perspective on the Eventuality of Death through Woodcut Illustrations

Isabelle R. Erb '13, *Art History and Italian Studies*

ADVISOR: *Jacqueline Musacchio, Art*

My Art History thesis focuses on Dominican friar Fra Girolamo Savonarola (1452-1498) and his role in popular religion in Renaissance Florence. He delivered sermons at San Marco, San Lorenzo, and the cathedral of Santa Maria del Fiore, to audiences of as many as 20,000. His preaching took advantage of contemporary crises, such as plague and famine, and achieved notoriety through his prophecies of spiritual renewal for the entire church. Savonarola's sermons were circulated in the form of early printed books with woodcut illustrations. The woodcuts expressed his awareness of death as a lurking evil, ready to attack at the first sign of weakness; Savonarola told his followers to keep these woodcuts in their homes as a reminder of the inevitability of one's passing. Ultimately, they proved to be a crucial aspect of Savonarola's control over Florence.

The Fiction of the Fabricated Ruin: Exploring Memory in the work of Adrián Villar Rojas

Mina Juhn '13, *Art History*

ADVISOR: *Patricia Berman, Art*

The sculptural practice of Adrián Villar Rojas (b. Argentina, 1980) threatens to fissure the continuous façade of our reality through its uncanny insinuation of parallel temporalities. His construction of monumental ruins amalgamates disparate forms ranging from the organic to the aggressively industrial, and his large-scale works are rendered more enigmatic due to their eventual destruction. His use of unfired clay produces a decaying aesthetic that alludes to the fragility of narratives traditionally imbued within monumental forms, thereby calling attention to the tenuous existence of individual and collective memory. Through an analysis of the artist's monumental clay works, this thesis will examine how Villar Rojas' ruinous aesthetic elucidates the calculated process of construing memory and history.

The Search for Liberty in Captivity: Cervantes in Africa (panel discussion) Science Center 104

Cara M. Borelli '15, *English*, Melissa M. D'Andrea '14, *Biological Chemistry*, Molly E. McNamara '15, *Spanish and Neuroscience*, Rebecca J. Rubinstein '15, *Spanish*, Gabriela M. Salcedo '15, *Undeclared*, Anne V. West '15, *Undeclared*, Anne M. Williams '13, *Mathematics and Spanish*

ADVISOR: *Jill Syverson-Stork, Spanish*

After fighting against the Ottoman Turks in the Battle of Lepanto in 1571, Miguel de Cervantes Saavedra was enslaved by his foes in Algiers (1575-1580). While held for ransom in this North African city, Cervantes witnessed a world diametrically opposed to his native Spain. Here, in Algiers' multicultural, multilingual, and multi-faith society, Cervantes experienced captivity, yet also an ironic reprieve from the Spanish atmosphere of Inquisitorial suspicion. As goods, persons, and ideas were traded furiously around him, Cervantes calibrated and considered the values of empire. From salvation by faith, to gender roles, to the notion of free will, Cervantes left no absolute unscrutinized in his works. Over four hundred years later, the author's illusive, engaging voice continues to challenge readers. After a semester of studying Cervantes, we hope to present a richer portrait of this former captive, beyond his well-known role as author of Don Quixote.

The Unending Beauty of Schubert's Lieder: A Lecture Recital on Word Painting (short performance) Jewett Arts Center-Auditorium

Katherine A. Siegel '14, *Music*

ADVISOR: *Jenny Tang, Music*

Whither, whither should you come to immerse yourself in the unending beauty of Schubert's lieder? Schubert's exquisite mastery of the lied (or German art song) will be our topic as you enjoy 3 of his over 600 lieder. *Ganymed* (Goethe, 1817), *An die Leier* (Bruchmann, 1822) and *Die Liebe Hat Gelogen* (Platen-Hallermünde, 1822) are the poetic masterpieces that will be performed and discussed to demonstrate Schubert's unparalleled ability to set the visions of poets to music. Schubert revolutionized the composition of song through his use of the piano and voice as equals in expressing the text. With the expressive power of the voice's melody line and the piano's harmony combined,

Schubert achieved a level of "word painting" that will lead us on a journey through these poems about love, war and Greek Mythology.

Mozart Sonata for Two Pianos in D major (K. 448)

(short performance) Jewett Arts Center-Auditorium

Chuyan Huang '15, *Undeclared*, Anita Z. Li '15, *Undeclared*

ADVISOR: *Lois Shapiro, Music*

Wolfgang Amadeus Mozart has been celebrated as one of the most brilliant and prolific classical period composers. The D major sonata was composed in 1781 when Mozart was 25. It is among the few of his two piano pieces, but is very well-known for its "Mozart effect", suggesting that classical music has a bigger chance of increasing reasoning skills and human brain activities than other types of music. The first movement *Allegro con spirito* starts off the sonata in D major, setting the central theme with a strong introduction. The second movement *Andante* is written strictly in an ABA structure at an appealing tempo. The last movement *Molto allegro* has a reoccurring theme with highly-contrasting melodies. Through a semester of work under the guidance of instructors Randall Hodgkinson and Lois Shapiro, the presenters will perform the first two movements of the sonata.

Science and Technology

Garbage In, Garbage Out: Wall Street, Main Street, and i-Street

(short talks) Science Center 278

Technology and Wall Street

Akofa A. Abiabile '13, *Computer Science*

ADVISOR: *Brian Tjaden, Computer Science*

When Wall Street started, every transaction, every computation was done by hand. Exchange floors were constantly buzzing with human activity and interaction. However, with the advent of new technology, there was a massive change on the Street; floors were closed down and replaced with screen trading systems. David Leinweber in his book, *Nerds on Wall Street* said, "there's so much technology in modern markets that it's easy to forget that some of our favorite markets, like the New York Stock Exchange, started out as very low-tech places." We're going to take a journey through time to see how technology

transformed Wall Street and I will describe a compute program I designed that simulates a little bit of what is done in big ratings companies on Wall Street like Standard and Poor's, where I interned this past summer.

Incorporating Public Outreach into Existing Curriculum as a Solution to Bridge the Perceived Gap between Classroom and Real World Biochemistry

Catherine Y. Cheng, Post-Baccalaureate Fellow, Biological Chemistry

ADVISOR: *Didem Vardar-Ulu, Chemistry*

There is a perceived gap in society between biochemistry in the classroom and that pertinent to real societal concerns. I will present a case study on how an explicit outreach component can be effectively incorporated into an existing upper-level undergraduate biochemistry course to help bridge the gap between "scientists" and "the public." In 2012, CHEM328 students were given three options for disseminating their understanding of a health-related biochemical problem to a general audience. The outcome was positive on both ends, highlighting the promise and value of outreach work in developing skills in independent content learning and communication.

User-customizable Game Environment in iPhone

Hye Soo Yang '13, Media Arts and Sciences

ADVISOR: *Scott Anderson, Computer Science*

While today's game engines provide realistic 3D gaming environments, they are predefined by the game designers and do not give much customizable flexibility to the users. The goal of the project is to create an iPhone application that allows a new gaming experience in which the users are able to recreate their physical space into a gaming environment. That is, they are able to play in a more personal and familiar setting. As an exploration game with a number of user-customizable maps, the application is designed to allow sharing visual experiences of being at a place in a more natural manner through entertaining environment.

Arsenic in Asia: Genesis, Chemistry, and Environmental Implications

Siyi Zhang '15, Undeclared

ADVISOR: *Daniel Brabander, Geosciences*

Over 100 million people worldwide are exposed to excessive amounts of arsenic through drinking arsenic-contaminated groundwater. Many Asian countries, in particular, are known for elevated arsenic level in their estuarine system. Previous studies have been focused on the transport mechanisms and public health effects in the sediment environment. Identifying the sources of arsenic and the initial process that removes arsenic from its origin is equally crucial for us to estimate arsenic distribution and to design prevention schemes. This study focuses on the a wide range of existing literature on Southeast Asia and East Asian countries with historically reported high arsenic in groundwater. Aside from the anthropogenic factors, it is hypothesized that the weathering of arsenic-bearing mineral phases in the Himalayas serves as the primary Arsenic reservoir for Ganges-Brahmaputra and the Mekong deltas in Southeast Asia. High-As Regions in East Asia are also included for provenance comparisons.

Project Runway: Model Organisms (short talks) Pendleton Hall West 116 Latency in V4/PIT Vision Cells

Monica A. Gates '15, Neuroscience, Jiun-Yiing Hu '14, Neuroscience

ADVISOR: *Bevil Conway, Neuroscience*

Little is known about how color is encoded in the brain. One possible encoding mechanism uses the timing of a neural response to a stimulus to convey information about hue, saturation, or luminance. Latency is one metric of the temporal dynamics of neurons, and is also used to assess the stage of a given neuron within the visual-processing hierarchy. We examined response latencies of visually responsive cells in macaque V4/PIT following presentation of visual stimuli varying in hue, saturation and luminance. We test the hypothesis that stimuli of high luminance contrast produce shorter latencies, as has been found for neurons in other visual areas. We also assess the differences in response latency to stimuli of identical luminance but different saturation and hue, to test the possibility that these dimensions are encoded by temporal dynamics. Preliminary results show latency to be inversely related to saturation.

Neuroprotective Agents: Understanding Female Sex Hormone Action in Diabetic Neuropathy

Sarah D. Finkelstein '14, Neuroscience

ADVISOR: *Marc Tetel, Neuroscience*

Sixty percent of diabetics develop some form of diabetic-neuropathy. Diabetic-neuropathy is the neuronal death of peripheral nerves, such as the sciatic nerve, due to the degradation of myelin, the protective protein surrounding the nerves. Schwann cells produce myelin in the peripheral nervous system. Interestingly, progesterone, an ovarian steroid hormone, causes an increased production of an important protein in myelin by binding to progestin receptors (PR) and recruiting steroid receptor coactivators, such as SRC-2. Estradiol, another steroid hormone, mediates the expression of PR in steroid-sensitive tissues. My study investigates whether PR are estradiol-induced in the female rat sciatic nerve using antibodies that tag PR and SRC-2 in the sciatic nerve of rats treated with estradiol. Co-localization of PR and SRC-2 in the same cell provides neuroanatomical evidence for their interaction and will enhance our understanding of the protective role of progestins in diabetic-neuropathy in females.

The Genetic and Hormonal Mechanisms of *Oncopeltus fasciatus* Abdominal Patterning Regulation

Tiffany Chen '13, Biological Sciences

ADVISOR: *Yuichiro Suzuki, Biological Sciences*

Phenotypic plasticity describes the ability of a genotype to produce different phenotypes in response to the environment. When a discrete switch exists in the phenotypes produced in response to a continuously varying environmental input, the plastic trait is known as a polyphenism. Developmental hormones, such as ecdysone and juvenile hormone (JH), are known to control polyphenisms, but the origins of polyphenisms remain poorly understood. Ventral abdominal spot patterning of *Oncopeltus fasciatus*, the milkweed bug, is an example of a temperature-dependent phenotypically plastic trait. Using double-stranded RNA injections, we knocked down the expression of the Hox genes abdominal-A (abd-A) and Abdominal-B (Abd-B), JH receptor Methoprene-tolerant (Met), and nuclear hormone receptors Ecdysone receptor (EcR) and Fushi tarazu factor-1 (FTZ-F1) to explore the genetic and hormonal mechanisms of abdominal pigmentation. Studying how the melanization of the abdominal spots are regulated has implications for our understanding of the origins of polyphenisms.

Choosing a Laboratory Animal: Understanding the Function of the Human Brain and Its Diseases through Various Animal Models

Michiko O. Inouye '14, Music

ADVISOR: Simone Helluy, Biological Sciences

At first glance, the study questions being explored at the Okano Lab at Keio University seem disparate, not to mention that nearly every project uses a different laboratory animal. How are the wrinkles of the brain formed, and why do they expand to different thicknesses? What is the function of the blood-brain-barrier and what molecules are responsible for its maintenance? Do social interactions reduce the risk of developing neurological disorders? Could RNA modification explain brain diversity among different species? How does a nervous system disease affect nerve cell appearance? Through a wide range of topics these studies converge to deepen our understanding of the human brain and its pathologies. The use of various laboratory animals allows us to look at neuroscience from both a biological and a psychological standpoint. In this presentation I will discuss experiments that involve animals such as mice, fruit flies, and marmosets, as well as the benefits of using these species.

You Are What You Eat (short talks) Pendleton Hall West 117 Modeling Obesity in *C. elegans*

Shaheen I. Rangwalla '13, Anthropology and Chemistry

ADVISOR: Didem Vardar-Ulu, Chemistry

One of the world's leading chronic diseases, diabetes, is on the rise in every country around the world. At Joslin Diabetes Center I worked with *C. elegans* to model obesity, the leading cause of diabetes in type II patients. Pathways that regulate metabolism are conserved from the worm to the mammalian level, allowing us use them as models. The worms were put on different diets and were specifically mutated to monitor fat content, health-span, and lifespan, as affected by the insulin pathway.

Malnutrition and Behavior: Do Hungry Honey Bees Dance?

Hailey N. Scofield '13, Biological Sciences

ADVISOR: Heather Mattila, Biological Sciences

Juvenile malnourishment affects learning and task performance in many species but is poorly studied in invertebrates. We examined the effect of such stress on the foraging perfor-

mance of an economically important model invertebrate, the honey bee (*Apis mellifera*). Pollen, which supplies essential nutrients to developing honey bee larvae, is often in short supply in colonies because of seasonal dearths or intensive management practices. However, it is not known how pollen deprivation during larval development affects the performance of honey bee workers as adults. We compared foraging behavior between groups of workers that were reared under conditions of either pollen abundance or deprivation. Longevity, onset of foraging, and time spent waggle dancing by workers were compared between treatment groups. Our study provides insight into the role that nutritional state during larval development plays in the health and function of honey bees and their colonies.

(Brachman-Hoffman Grant and Janina A. Longtine Fund for Summer Research in the Natural Sciences)

The Secret Lives of Bluestreak Cleaner Wrasse in Hoga Island, Indonesia

Alyssa G. Wibisono '13, Biological Sciences

ADVISOR: Jeffrey Hughes, Biological Sciences

The bluestreak cleaner wrasse (*Labroides dimidiatus*) is an integral part of the tropical coral reef ecosystems as a cleaning organism that rids other fishes of ectoparasites. This seemingly mutualistic interaction between host and cleaner fish is not as straightforward as it seems due to the cheating behavior of the cleaners. With a strong preference towards host mucus and scales, cleaners sometimes cheat and take a bite out of the host. In summer 2012, I studied the behavioral choices of blue streak cleaner wrasse in Hoga Island, Indonesia by documenting cleaner wrasse activities through underwater videos and utilizing benthic survey data. I used market theory to explain the actions and choices made by the cleaners, and to elaborate on how the cleaner-host interaction may have been maintained over time.

An Unlikely Relationship: Predator-prey Interactions between Flatworms and Tube-building Amphipods in the Chesapeake Bay

Julia N. Adams '14, Biological Sciences

ADVISOR: Jeffrey Hughes, Biological Sciences

Within the Chesapeake Bay, flatworms are recognized as common predators of barnacles and oysters. Historically, the two main flatworm species, *Euplana gracilis* and *Stylochus ellipticus*, have been grouped together due to a difficulty

to distinguish one from another. Although *S. ellipticus* has been extensively studied because of its impacts on commercially valuable oysters, little is known about *E. gracilis*. We elucidated the differences between these two flatworms. We focused primarily on the predator-prey interactions of *E. gracilis* and its commonly encountered benthic prey species in Chesapeake Bay. Our results indicate voracious predation on *Apocorophium lacustre*, a common tube-building amphipod found along the Atlantic coast. We found a positive relationship between flatworm size and consumption rates. Tubes constructed by amphipods provided no refuge from predation. This is the first reported occurrence of estuarine/marine flatworm predation on amphipods, and makes clear the trophic importance of this abundant, although overlooked, predator.

Fight, Flight, and Regenerate (short talks) Science Center 396

Integrating Behavior and Biomechanics to Understand Fish Escape Performance

Tiffany Chen '15, Undeclared, Erin M.

Connolly '14, Biological Sciences

ADVISOR: David Ellerby, Biological Sciences

Fish show a high degree of variability in escape behavior, particularly in regard to their chosen direction of escape relative to a threat. In most individuals, escape angles cluster around two or three preferred directions. This may be a behavioral strategy that limits the predictability of escape behavior. It may also be driven by underlying biomechanical constraints; this being the case, there may be performance benefits associated with the preferred trajectories. To test this we compared performance, as indicated by peak velocity, peak acceleration, and distance moved, between escapes performed at preferred versus infrequently chosen directions. There were no differences in performance in relation to escape angle. This suggests that the observed escape angle distribution is largely associated with behavioral factors, rather than dictated by proximate factors relating to escape performance.

The Role of Steroid Receptor Coactivators in Hormone Action in Brain

Young C. Hsu '13, Neuroscience

ADVISOR: Marc Tetel, Neuroscience

The ovarian steroid hormones estradiol (E) and progesterone (P) play important roles in reproductive physiology and behavior. The effects of E and P are mediated by their respective receptors, estrogen receptor (ER) and progesterin receptors (PR) which are transcription factors. E induces the expression of

PR, which are expressed as two isoforms: full length PR-B and the shorter PR-A. These two PR isoforms, PR-A and PR-B, have profound functional differences in physiology and behavior. Members of a family of steroid receptor coactivators (SRCs), SRC-1 and SRC-2, facilitate the transcriptional activity of PR. In the present study, we investigate whether SRC-1 or SRC-2 are differentially expressed with the PR isoforms in mouse brain. We used triple label immunohistochemistry in PR transgenic isoform specific knock-out mice. The results of our study will bring us closer to understanding how steroid receptor coactivators contribute to the differences of the mouse PR isoforms in brain and behavior.

Determining the Role of Hedgehog Signaling Pathway during Limb Regeneration in the Red Flour Beetle, *Tribolium castaneum*

Carla M. Villarreal '13, Biological Sciences

ADVISOR: *Yuichiro Suzuki, Biological Sciences*

Despite studies performed on many species, including amphibians and insects, the mechanisms regulating limb regeneration remain poorly understood. Hedgehog (HH) is a major signaling pathway found in most, if not all, animal species, including humans. In vertebrates, HH signaling has been shown to play key roles during limb regeneration. To determine whether Hedgehog might also play a role during limb regeneration in *Tribolium castaneum*, HH signaling was silenced through RNA interference. HH silencing resulted in a complete loss of leg and antenna regeneration, indicating that the HH signaling pathway is necessary for the initiation of regeneration. Specifically, HH appears to be necessary for the growth of the blastema that forms at the ablation site. Studies on the role of Hedgehog in blastema proliferation and re-patterning of regenerating legs are currently underway. Overall, our findings suggest that HH signaling is a conserved mechanism for appendage development and limb regeneration across Metazoa.

Investigating Electrical Stimulation Using Conducting Polymeric Materials for Peripheral Nerve Regeneration

Ava K. Mokhtari '14, Biological Chemistry

ADVISOR: *Gillian Hendy (MIT), Biology*

Last summer, I worked in the Langer laboratory at the Koch Institute at the Massachusetts Institute of Technology. My work focused on peripheral nerve regenera-

tion, creating new biomaterials that were biocompatible and electrically conductive in vivo. Specifically, my research investigated the use of electrically conductive polymers as a means to hasten the regeneration of peripheral nerve cells to prevent otherwise inevitable muscle death in affected areas. The aim of my study was to design, synthesize, and form biodegradable conducting polymeric materials that can be electrically stimulated in vivo to encourage nerve cell regeneration and inhibit muscle atrophy.

Going Insane in the Membrane: Investigating Protein-Lipid Interactions in the Elmore Lab (panel discussion) Science Center 277

Maria E. Bustillo '13, Biological Sciences,

Alexandra L. Fischer '13, Chemistry, Julia

A. Klaipts '14, Biological Chemistry, Maria

A. LaBouyer '15, Biological Sciences, Jane E.

Lodwick '14, Chemistry, Penny Wang '14,

Chemistry, Amy Zhou '14, Chemistry

ADVISOR: *Donald Elmore, Chemistry*

The Elmore lab is interested in understanding the interactions between proteins and the lipid membrane of bacterial and eukaryotic cells, in particular, antimicrobial peptides derived from histone protein subunits. These antimicrobial peptides selectively kill bacteria over normal mammalian cells, and some have been implicated as having anti-cancer properties as well. Through examination of a class of related peptides, we hope to elucidate the effects that a peptide's primary structure have on its secondary structure and subsequent cytotoxic activity and mechanism of killing.

Resonance Rhapsody: Solving Biomedical Problems with Magnetic Resonance (panel discussion) Founders Hall 120

Our lab has focused on four projects: 1.) We are building a biofunctional nanoparticle which can be non-invasively visualized and have the capacity to selectively irradiate cancerous pancreatic tumors. 2.) Using magnetic resonance imaging (MRI) we are able to track the migration of anterior proliferation center (APC) cells to the neurogenic niche in *Procambarus Clarkii* crayfish. 3.) Our study of vocal learning uses blood oxygen level dependent (BOLD) fMRI to identify the brain regions participating in song development in the zebra finch. 4.) Our last study utilizes magnetic resonance

and diffusion tensor imaging as a tool to probe a genetic and epigenetic mouse model of schizophrenia.

A Magic Bullet: Development of a Multifunctional Iron Oxide Nanoparticle for Targeted Tumor Therapy

Eugenia White '13 Chemistry, Zi Wei (Alice)

Liao '15 Biological Chemistry, Raji Nagalla '14 Biological Chemistry

ADVISORS: *Nancy H. Kolodny, Chemistry, Nolan T. Flynn, Chemistry, Drew C. Webb, Biological Sciences*

The low survival rate and lack of surgical options for many cancer patients has necessitated the development of highly specific and potent potential drug therapies. Nanoparticles, spherical particles with diameters an order of magnitude smaller than wavelengths of visible light, are ideal for cancer therapeutics due to their small size, low toxicity, and high surface area to volume ratios. Our project focuses on the surface modification of superparamagnetic iron oxide nanoparticles to achieve biocompatibility and targeted drug delivery. Nanoparticles are characterized with magnetic resonance imaging (MRI) to determine their quality as contrast agents for tracking in vivo. Recent work has focused on coating iron oxide particles with silica and polyethylene glycol (PEG) to increase biocompatibility along with the conjugation of nanoparticles to monoclonal antibodies for targeting pancreatic cancer cells. (Research supported by Roberta Dey Staley Fund for Cancer Related Research, Sophomore Early Research Program, and the National Institutes of Health (NIH)).

Tracking Cells from Blood to Brain: Using MRI to Study Neurogenesis in the Crayfish

Yi Ling Dai '13, Neuroscience

ADVISORS: *Nancy H. Kolodny, Chemistry, and Barbara S. Beltz, Neuroscience*

Contrary to popular belief, adult neurogenesis, the birth of new neurons during adulthood, has been observed across organisms ranging from humans to the crayfish. The neurogenic niche, a cluster of neural precursor cells, has been identified in our animal model, the crayfish *Procambarus clarkii*. We hypothesize that hematopoietic stem cells (HSC) from a newly discovered tissue, the anterior proliferation center (APC), serve as the basis for neural precursors

in neurogenesis. Cells of the APC have been shown to display characteristics similar to those of stem cells. We employ magnetic resonance imaging (MRI) to track migration of APC cells labeled with superparamagnetic iron oxide particles (SPIOs) in *Procambarus clarkii*. (Research funded by the Staley Summer Award for Cancer-Related Research and the Howard Hughes Medical Institute)

MRI, DTI and Behavioral Paradigm to Explore a Genetic and Epigenetic Mouse Model of Schizophrenia

Palig Mouradian '13, Neuroscience, Tamara Biary '15, Chemistry

ADVISOR: *Nancy H. Kolodny, Chemistry*

One percent of the global population suffers from Schizophrenia, a chronic brain disorder that leads to behavioral, cognitive and social abnormalities. Although no specific cause has been identified, environmental, genetic and epigenetic factors have been implicated as possible factors. Our study attempts to validate a genetic and epigenetic mouse model for schizophrenia, GCP11/AAV. These mice have a genetic mutation that is hypothesized to cause diminished levels of the neurotransmitter glutamate, in hopes of modeling glutamate receptor dysfunction. We introduced a histone deacetylase enzyme to newborn mice to elicit epigenetic dysregulation. Magnetic Resonance Imaging and Diffusion Tensor Imaging are used to examine volumes of brain regions and the structural integrity of white matter tracts. A behavioral paradigm is also employed to test the mice's sociability. Magnetic Resonance Spectroscopy was used to analyze neurometabolite levels. (Research supported by the Howard Hughes Medical Institute, the Provost's Office- Margaret Clark Mogan Foundation and Nellie Zuckerman Cohen and Anne Cohen Heller Professorship in the Health Sciences, and the Neuroscience program.)

Functional MRI for Vocal Learning and Memory in the Zebra Finch Model

Rachel Parker '13, Chemistry, Sarah Zemlok '14, Chemistry, Cara Borelli '15, English

ADVISORS: *Nancy H. Kolodny, Chemistry, and Sharon Gobes, Neuroscience*

Songbirds provide a particularly useful cognitive model for human vocal learning and memory acquisition due to many established developmental, physiological, and genetic parallels with humans. Our work uses functional magnetic resonance imaging (fMRI) to study the process of vocal learning

in the zebra finch (*Taeniopygia guttata*). fMRI allows us to locate the neuronal response to an auditory stimulus in real time. Because this method is noninvasive, it permits longitudinal studies. Our efforts thus far have focused on developing the appropriate methods for fMRI image acquisition and auditory management in songbird applications. These efforts include preliminary functional imaging experiments to investigate song learning in juvenile zebra finches. (Research supported by the Howard Hughes Medical Institute.)

Social Sciences

Beauty in the Eye of the Beholder

(short talks) Pendleton Hall West 212

Commodification and Valuation of the Female Body in the New Orleans Slave Market

Elizabeth A. Brown '13, History

ADVISOR: *Ryan Quintana, History*

By considering the economic valuation of slaves in the decade prior to the abolition of the transatlantic slave trade in 1808, this project reconstructs the narrative of African women within the slave markets of New Orleans: the largest slave trading site in North America. Female bodies were subjected to a persistent economic and ideological valuation by the varied actors who participated in the market – slave, trader and planter – who commodified and attempted to dehumanize the slave, necessarily and intentionally reducing enslaved women “to the simplicity of a pure form: a person with a price.” [1] By considering the valuation and ownership of productive and reproductive labors as the abolition of the trade loomed imminent, this project considers the ways in which enslaved women countered this process, shaping their sense of self and exercising personal agency within the confines of the market.

[1] Walter Johnson, *Soul by Soul: life inside the antebellum slave market* (Cambridge: Harvard University Press, 2001), 2.

Look at Me, Don't Look at Me: Body Image and Types of Narcissism

Katharine M. Hargreaves '13, Psychology

ADVISOR: *Jonathan Cheek, Psychology*

The project examines the three faces of the narcissism construct – covert, overt, and adaptive -- and explores how each of these

relates to aspects of body image in a sample of 175 Wellesley students. Previous research found that overt and covert narcissism correlate in opposite directions with body esteem. The present study expands upon the previous research by assessing all three types of narcissism and using a wider range of body image measures including body surveillance, control, shame, and exhibitionism.

My Black is Beautiful: Exploration of Body Image in Students of African Descent

Temple R. Price '13, Psychology

ADVISOR: *Tracey Cameron, Office of Intercultural Education*

Previous research suggests that women of African descent have relatively healthy attitudes about their appearance – especially those with a strong racial identity (Parker, Nichter, Nichter, & Vuckovic, 1995; Oney, Cole, & Sellers, 2011). This study was designed to be a quantitative assessment of the body image concerns of college-aged women. The current inquiry builds on a previous study that explored body image in other ethnic/cultural populations. For purposes of this study, I focused on students of African descent. Surveys were administered to participants about aspects of their body esteem. Preliminary findings, using SPSS for statistical analysis, indicate that women of African descent are particularly happy with their ethnically-salient features, such as noses or lips. Possible explanations for how women of African descent form body esteem in a western context will be discussed.

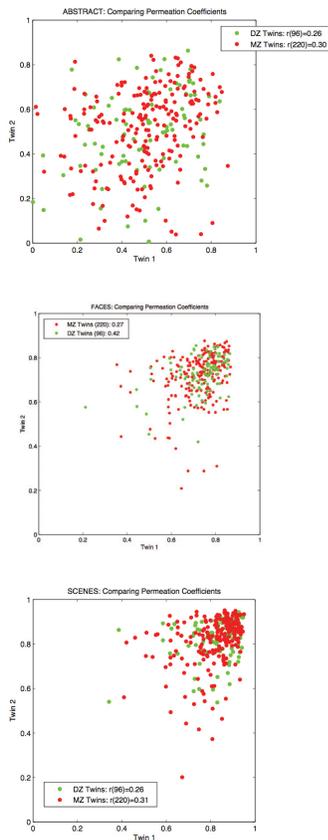
Really, You Find That Attractive? Explaining Differences in Tastes for Beauty

Ho Lum Kwok '13, Psychology and Economics

ADVISOR: *Jeremy Wilmer, Psychology*

The notion that beauty is entirely “in the eye of the beholder” is inconsistent with findings of shared preference for faces, scenes, and other visual stimuli. Despite such convergence of taste, substantial individual differences also exist. In a study involving 316 twin pairs, we explored the degree to which genetic and environmental factors influence the uniqueness of individuals' beauty preferences. The question was: What makes people more or less unique in who and what they find attractive? Our findings suggest that genes have minor influence, if any, on the uniqueness of one's taste

for faces, abstract objects, and real world scenes. Rather, most individual variations in preferences are the result of unique personal experiences. Interestingly, age and gender were not significant predictors of how idiosyncratic an individual's beauty preferences were. Results suggest that our quirky aesthetic preferences are large attributable to our unique experiences.



Origins of the Contemporary Construct of Gender

(short talks) Pendleton Hall East 139

An Evolutionary Bias: The Role of Gender in Fear Responses to In-group and Out-group Targets

Margarita B. Rabinovich '13, Psychology

ADVISOR: Robin Akert, Psychology

A study conducted in the Sidanius Lab at Harvard University investigates fear of out-group males among minimal groups. Previous research has indicated that fear responses are acquired more rapidly and are more resistant to extinction when the target is a male from a racial out-group, as opposed to a male from a racial in-group or a female. The interpretation of these results suggests that this response is rooted in evolution.

The current study draws methods and theoretical concepts from previous studies but investigates this phenomenon among minimal groups. Various techniques were used to test this prediction including the use of an Implicit Association Test (IAT) and classical conditioning.

The Disney Effect: An Examination of Disney Princesses and the Portrayal of Gender Roles

Michelle H. Cho '13, American Studies

ADVISOR: Wendy Robeson, Wellesley Centers for Women

Disney has become a dominant storyteller for children all over the world, and has proven to be very influential in fostering belief systems based on race and gender. The Disney Princess Franchise has attracted many young girls and has created a consumer culture. Despite Disney's wholesome image, its "Princess Phenomenon" must be examined in order to question the gender roles that are being propagated. The Disney Princess products are more than entertainment, as the products are encoded with messages, which aid children in making sense of their world. What are the gender roles that Disney fosters through the Disney Princess Franchise? What messages is it sending to young girls and what are the consequences? (Research supported by the 2012 Summer Research Program in Social Sciences at Wellesley College)

John Locke and Modern Feminist Moral Psychology

Lillian Y. Li '15, Undeclared

ADVISOR: Eugene Marshall, Philosophy

John Locke, a late 17th century British philosopher, wrote on liberty, will, and motivation. His past considerations parallel concerns of modern feminists. Concerns include: how does patriarchy interfere with female motivation and autonomy? Why might a woman act contrary to her beliefs? Offering a way think about these questions, I will examine Thomas Hill's case of the Deferential Wife: she is someone who believes in gender equality, and yet who is proud to devotedly serve her husband. This relatively mundane, even happy, scenario is problematic for moral agency. Explaining why, I will approach the question: are women full agents with only authentic preferences or are women victims of psychological oppression with deformed desires? Finally, I return to Locke and his theories on autonomy to argue why his theories are relevant and even necessary to the future of feminist thought.

A History of Consumption and Advertising in China's Women's Lifestyle Magazine: A Closer Look at ELLE

Barbara F. Jiang '13, Economics

ADVISOR: C. Pat Giersch, History

During the decades after the Cultural Revolution, consumption in China has experienced tremendous growth. Today, China's luxury consumption accounts for 25% of the world's total. At the same time, advertisements in China's women's lifestyle magazines have exploded. In 2012, ELLE began releasing two different issues each month to accommodate the high demand for advertising space. In this study, my research was focused on how the changing social environment in China was reflected in consumption habits and gendered advertising practices.

The Clash of Cultures

(short talks) Pendleton Hall East 339

True-hearted Christian Teachers to Self-Help Girls: Visions of Students on Financial Aid at Wellesley College, 1878-1927

Katherine W. Cali '13, History

ADVISOR: Brenna Greer, History

Despite the perception that financial aid is relatively new phenomenon, from Wellesley College's founding in 1875, its benefactors made efforts to assist students unable to afford the cost of attendance. Founder Henry Fowle Durant hoped to open Wellesley to "calico girls" as well as wealthier "velvet girls," and his supporters articulated their own visions of the financial aid student's role and value within the College. Using the 1878-1899 and 1918-1926 reports of the Student's Aid Society (SAS), I will explain how the SAS depicted financial aid students to its donors and analyze how and why these depictions changed over time, with reference both to Wellesley's unique history and its broader social context. I will also explore how the SAS's changing visions of financial aid students reflected the evolution of white, educated middle-class women's expected societal roles--and of their actual experiences--from the Gilded Age through the Roaring Twenties.

Is Being Korean Cosmopolitan Possible? Exploring the Self-Identity and Worldview of Korean International Students at American Colleges

Ji-Su Park '13, Sociology and Political Science

ADVISOR: Joseph Swingle, Sociology

Of what relevance is national identity to students who spend extended periods of

time away from their "home" nation? Is it possible for an individual to be nationalistic and cosmopolitan simultaneously? This study examines Korean students attending college or university in the U.S. These students grew up in a "one-blood" nation but now find themselves in a far more racially and ethnically diverse nation. My research explores how the U.S. experiences of these students influence their nationalistic versus cosmopolitan worldviews. Data come from survey and interviews with Korean students across the U.S.

(Mis)representations of Hitler in India

Abigail R. Weitman '13, Peace and Justice Studies and South Asia Studies

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

With over 10,000 copies of Hitler's *Mein Kampf* sold in Delhi annually, Hitler has become somewhat of an unlikely celebrity in India. Indian T.V. shows, films, restaurants and clothing apparel stores have sparked controversy by the representations of Nazi insignia and glorification of Hitler's dictatorial leadership. In what setting has Hitler become of interest to the youth culture and why have lessons from the Holocaust been a disconnected narrative? In this presentation, I will share examples of Hitler's popularization in India and provide possible theories explaining where this interest in Hitler stems from.

Wearing Native: Misappropriated Indigenous Cultural Property in the Fashion Industry

Kalina Yingnan Deng '14, Philosophy

ADVISOR: *Anastasia Karakasidou, Anthropology*

For First Nation peoples, native cultural property – aesthetic designs, rituals, and symbols – are intrinsically connected to their spirituality and to their sovereignty as indigenous people. However, fast fashion labels and haute couture houses alike have "borrowed" sacred native designs to cater to increased demands for "native" and "tribal" trends. A few examples of this exoticism in the fashion industry include Karli Kloss's wearing a decorated war bonnet in the 2012 Victoria's Secret Fashion Show, Ralph Lauren's romanticized "Southwestern" prêt-à-porter collections, and ASOS's marketing mantra for consumers to "Go native with Aztec & Navajo prints." In light of this fashion grievous faux pas, I argue that fashion's consumption of indigenous cultural property is a modern continuation of colonialist discourse. Furthermore, I argue that the commoditization

of sacred native arts attributes to the neocolonialist phenomenon termed by Rosemary Coombes as cultural cannibalism and by bell hooks as "eating the other."

Gender in a Transnational Context

(panel discussion) *Jewett Arts Center 454*

Re-Imagining Immigrant Identity Formation within a Danish and American Context

Jenny Jean '13 Women's and Gender Studies

ADVISOR: *Irene Mata, Women's and Gender Studies and Rosanna Hertz, Women's and Gender Studies*

Forced or voluntary immigration forces individuals to renegotiate their identity as their psychosocial context changes. While forming a renegotiated identity may be uneventful for many immigrants, it may be more arduous for those immigrants whose physicality continuously marks them as "other." By examining the modes through which immigrants negotiate their identities through spaces of visibility and invisibility we can begin to understand the ways immigrants attempt to create a non-fragmented sense of self. We can also begin to understand how these tools of identity formation are both a product of and a challenge to the societal structure in which they find themselves.

Natural Disasters as Social Disasters: the Political Economy of Gender-Based Violence in Post-Disaster Settings

Monica Setaruddin '14, Psychology and Health & Society

ADVISOR: *Irene Mata, Women's and Gender Studies and Rosanna Hertz, Women's and Gender Studies*

Previous research demonstrates that natural disasters increase women's risk of violence. It has been surmised that poverty and lack of resources exacerbate gender-based violence. In addition to these factors, the political economy of gender inequality plays a crucial role in explaining why women are particularly vulnerable in post-disaster settings. Using a political economy framework to evaluate post-Haiti earthquake, South Asian tsunami disaster, Sri Lanka Tsunami disaster, and Hurricane Katrina, I will discuss the gendered impact of natural disasters. Its implications for gender-sensitive planning recommendations will also be discussed.

Chinese Women Leaders Against Oppression

Elizabeth Torres '14 Women's and Gender Studies

ADVISOR: *Irene Mata, Women's and Gender Studies and Rosanna Hertz, Women's and Gender Studies*

This paper is based upon an analysis of interviews collected by Professor Hertz about the lives of women founders of various NGOs in China. Along with historic events including, the Cultural Revolution, Tiananmen Square and the World Women's Forum, I will draw a parallel between the history of these NGOs and that of China. By studying these three generations of NGO women leaders who challenged organizational and cultural norms, I show how people or women who became leaders in China gained agency and learned how to navigate the Chinese government system, how to garner support, and how to lobby for the people they served. I suggest that it is the experiences they underwent – not their personality -- that motivated them to become leaders. Therefore, my research lobbies for the historical, cultural, and gendered impacts of "experienced struggles" undergone by these women.

"Out of Many, One People": A Gender Analysis of Jamaica from Outside and Within

Wendy West '13, Women's and Gender Studies and Biological Sciences

ADVISOR: *Irene Mata, Women's and Gender Studies and Rosanna Hertz, Women's and Gender Studies*

Jamaica's national motto is "Out of Many, One People." This aphorism embodies the diverse populations of people that identify with the Jamaican heritage. However, gender-based issues on the island arise out of the lack of representation of women in positions of power and an increased rate of sexual assault and gender-based violence. This gender-based violence is, in part, a result of the normalization of a hyper form of masculinity within Jamaican society. Returning to the country during Wintersession helped me gain insight into the manifestations of this female marginalization and the feminist movement on the island attempting to redress these gender-based issues. As a Jamaican-born United States citizen, I have the unique experience of studying Jamaican culture through the lens of both an outsider and a partial member of the society, a positionality that allows for a complex analysis of gender in this Caribbean country.

How Language Reveals Us: Insights From Sociolinguistics (panel discussion) Jewett Arts Center 450

The Effects of Speaker Accent and Speech Content on Interpersonal Evaluations

April Crehan '13, *Cognitive and Linguistic Sciences and Italian Studies* and Gretchen Larsen '13, *Cognitive and Linguistic Sciences*
 ADVISOR: Andrea Levitt, *Cognitive and Linguistic Sciences and French*

The distinctive qualities of each human voice allow us to instantly differentiate our sister from our mother, a good surprise from a bad one, and a local person from one who comes from out of state. To investigate the impact of accent and speech content on listeners' perceptions of female voices, we had speakers of a Southern and a British dialect recite two types of speech samples each. These "passionate" and "dull" samples had a surprisingly large impact on how listeners perceived the status, solidarity and dynamism of the speakers.

#thatmomentwhen You Use a Hashtag and You're Not Sure Why

Catherine Guo '13, *Cognitive and Linguistic Sciences* and Ariel Robinson '13, *Cognitive and Linguistic Sciences & Middle Eastern Studies*
 ADVISOR: Andrea Levitt, *Cognitive and Linguistic Sciences and French*

Hashtags have been used since 2008 to organize and catalog "tweets" on Twitter, but in recent years, their use has expanded beyond this social media service. In our presentation, we will discuss how Wellesley students use hashtags on Twitter, Facebook, and Tumblr. We proposed four reasons for using hashtags: to promote the visibility of an idea, product, or cause; to comment on a previous statement; to make content searchable; and as a means of self-identification. Given the functional differences among the three platforms, we hypothesized that Wellesley College students would use hashtags differently depending on the social media site. While our results did not yield statistically significant differences in reasons for using hashtags, we did find patterns in rates of hashtag use between multiple platforms users and single-site users. These patterns highlight differences in hashtag use between casual and active users of social media.

Queering Sociolinguistics – What Heterosexual Marketplace?

Blake Desormeaux '13, *Cognitive and Linguistic Sciences* and Sarah Vaughn '15, *Cognitive and Linguistic Sciences*

ADVISOR: Andrea Levitt, *Cognitive and Linguistic Sciences and French*

The terminology of identity within the queer community is broad and varied. We polled a number of queer and non-queer students at Wellesley College to determine their levels of comfort with some queer identifying terms. Terms were classified as either general, reclaimed or slur. Our findings led to interesting inferences about the process of slur reclamation in the greater queer community and about the non-queer community's understanding of queer identities. They also suggested several avenues for further research.

Perspectives on Social Issues I: Research from the Wellesley College Freedom Project (panel discussion) Founders Hall 126

The Green Libertarian: An Oxymoron or a New Species?

Ana Medrano Fernandez '13, *Economics*
 ADVISOR: Thomas Cushman, *Sociology*

Sustainability can be framed as issue of distributional equity. In understanding that natural resources can be depleted, we understand that our unregulated consumption today affects the ability of those in the future to consume. Governments often feel responsible to intervene and act on the behalf of the environment through cap and trade policies, subsidies and regulations. Libertarians dislike government intervention and prefer free markets. This poses the question: How would a libertarian deal with environmental concerns? In this presentation, I explore whether libertarian ideals and environmental sustainability concerns have any common ground.

Self-Employed: Exploring the Rationale Behind Legalizing Prostitution

Lavanya Ganesh '15, *Political Science and Economics*

ADVISOR: Thomas Cushman, *Sociology*

Historically, representative political bodies have used their power as lawmaking entities to impose certain "righteous" social mores upon its people in order to preserve the "values" of some bygone era. Libertarians consider this to be a form of state paternalism, which often results in laws that are unnecessary and which sometime result in unintentional negative

social consequences. Laws that criminalize prostitution are of this nature, and I will explore arguments for legalizing sex work under an economic and philosophical perspective guided by the principles and ideas of classical liberalism.

A Market for Human Organs?: Global Considerations

Mallika Govindan '15, *Biological Sciences*
 ADVISOR: Thomas Cushman, *Sociology*

While the current US government has priced organs at \$0 and made their sale illegal, countries like Iran and Israel allow regulated organ selling. All of the nations in the modern world face pressing issues regarding human organs, ranging from long and impossible wait-lists to coercive organ donations. My research focuses on contrasting case studies, analyses by bioethicists, and a history of laws and bans regarding organ donation. This presentation focuses on solutions to the problems and issues surrounding organ donations that have been proposed by libertarians, in comparison with views from other political and philosophical positions.

Humanities

Let's Go Europe

(short talks) Pendleton Hall East 339

Italian Women in the 1930s: From the Fascist Vision of Woman as Prolific Mother and Devoted Wife to Female "Otherness" in Alba de Céspedes' There Is No Turning Back*Mariya Chokova '13, French and Italian Studies*ADVISOR: *David Ward, Italian Studies*

In my project I analyze sexual politics in Fascist Italy in the 1930s and will provide an ideological overview of how fascism perceived women and their role in society. Of course, the official discourse did not reflect accurately Italian reality and there still remained many spheres of public and private life that Mussolini's regime did not manage to infiltrate with its ideology. Alba de Céspedes' novel *There Is No Turning Back*, published in 1938 and banned by the fascist authorities two years later, after having gone through a sensational nineteen editions, provides an alternative view of what women's aspirations were and how they lived in Italy in the 1930s. Through an exploration of the "life stories" of the female protagonists in the novel, my aim is to observe how they conformed to, or contested, the official political discourse that defined fascist gender politics, relegating women to a subaltern social position. (Research supported by a Schiff Fellowship)

Editorial in Translation: Non-Native English Speaking Authors and the Role of the Editor on the Journal of Italian Cinema and Media Studies*Sydney S. Cusack '14, English*ADVISOR: *Flavia Laviosa, Italian Studies*

The *Journal of Italian Cinema and Media Studies* (JICMS, published by Intellect Books) is a peer-reviewed English language journal that is a forum for debate over Italian film and media production, reception, consumption and interaction with other forms of cinema and media. Additionally, JICMS examines Italy as a geographical-cultural locus for contemporary debate on cinema both from and about Italy. For three semesters, I have worked as an Editorial Assistant for JICMS: my work focuses primarily on the updating the semantic, lexicon, and syntactic choices that authors have made and revising their work so that it will be published in its best possible form. I will discuss the core mission of JICMS, my contributions to the journal, and my

deepened understanding of both the Italian and English languages that I have gained from reviewing English texts written by non-native English speakers. (Work supported by a grant from the Wellesley College Provost's Office).

The French Republic, "Eldest Daughter of the Church"?: La Morale Républicaine of 19th-Century Secular Instruction and Its Catholic Roots*Elizabeth A. Yazgi '13, French and History*ADVISOR: *Venita Datta, French*

This project uses the secular school of nineteenth-century France to understand one of the "pillars" of French identity—laïcité, or the separation of Church and state. Solidifying itself through anticlerical policy, the French state reified the notion of a Republic-Church opposition. The secularized school and its morale républicaine became instrumental in this process. An analysis of the textbooks which preached this morale républicaine, however, reveals the continuities between the latter and Christian principles. At the same time, an examination of the political debates surrounding school secularization suggests a reason for the obfuscation of such continuities. By unmasking these, I will introduce a more nuanced appreciation of laïcité and the role of French anticlericalism in shaping conceptions of the Republic.

Shipwrecks and Trade in the Archaic Mediterranean*Haley E. Bertram '13, Classics*ADVISOR: *Bryan Burns, Classical Studies*

Shipwrecks in the Western Mediterranean are a valuable but complex source of evidence of Archaic exchange. The wrecks yield information about the goods being traded and potential exchange routes. However, the variety of content and scale of the cargos, in addition to loss of material caused by looting and 2,500 years under water, complicate the interpretation of the archaeological evidence. My senior thesis examines the nature of early exchange between Greeks, Etruscans, and indigenous populations of the Western Mediterranean through the lens of Etrusco-Corinthian fineware pottery as a non-subsistence commodity. In comparison with other shipwrecks, the *Pointe Lequin IA* shipwreck has an exceptionally large quantity of fineware pottery. Consequently, the wreck can be used as a unique case study in order to consider fineware pottery and its place in early exchange.

Rhyme and Reason

(short talks) Pendleton Hall East 239

Medieval Nonsense Verse: Contributions to the Genre*Bridget E. Begg '13, English and Biological Sciences*ADVISOR: *Matthew Sergi, English*

Good nonsense creates a multitude of tensions; it complicates the relationships of syntax and language, meaning and interpretation, and, in the question of its origins, literature and folklore. In spite of a significant body of medieval nonsense in both drama and poetry, most criticism erroneously treats "literary nonsense" as a discrete Victorian phenomenon. Other critical veins emphasize nonsense's universality—though deeply intertwined with human psychology, the medieval and folkloric nonsense tradition relates to the Victorian much more concretely. This connection has not yet been grounded in literary, academic analysis; I forge this connection in this thesis. Overlooking the distinctly literary historical traditions embedded in modern nonsense oversimplifies the genre, inappropriately diminishing the continual literary relevance of medieval nonsense. Using the appearances of nonsense in medieval performance as a contextualizing lens, I elucidate the relationship of medieval nonsense to Victorian, particularly through conserved folkloric motifs and a performance-derived spirit of celebration. (Research supported by a Schiff Fellowship)

With So Good A Woman: The Nature of Love and Violence in Genre in Shakespeare*Kelsey A. Ridge '13, English and East Asian Studies*ADVISOR: *Yu Jim Ko, English*

In Shakespeare's *Much Ado About Nothing*, *Othello*, and *Cymbeline*, one senses a common thread: men who falsely suspect that their female partners of sexually infidelity. However, despite the similarity of their original offense, each man is punished differently, and these plays reach startlingly different outcomes and falls into a different genre. Scholars have long wondered why. Examining the plays reveals important dissimilarities between these men, their partners, and their relationships, and as the plot and the characters unfold, the couples are driven towards diverse endings. Claudio, barely punished, gets a happy ending. *Othello*, though, is brutally punished. Finally, *Posthumus*, also roughly punished, finally understands how to redeem himself and save his marriage. By

rewarding some actions and choices with happy endings and condemning others to sorrow and death, Shakespeare paints a picture about the importance of a certain kind of love and bond in a healthy and strong relationship.

Poetry: The Scientific Method's Missing Step

Sharon Tai '13, *English and Economics*

ADVISOR: Kathleen Brogan, *English*

Once mingled, science and poetry diverged as our understanding of the world sharpened and advanced. Now considered antitheses, these two types of thought rarely meet. The poems of Marianne Moore and A.R. Ammons undermine this widely-held opinion by demonstrating how science can function as a means of communication. Without sacrificing the merits and cultural purposes of poetry, both these poets fully integrated scientific vocabulary and concepts into their poems. Despite their shared scientific regard, Moore and Ammons' works differ greatly. Moore wished to communicate the idea of observable but ineffable principles, and turned to science to compensate for the failings she perceived in language. Her post-modern successor Ammons demonstrated an infallible faith in language, viewing scientific jargon as simply another list of words to be used in the verbal capture of his observed surroundings. Through these two poets' works, their craft functions as the intermediary between scientific observation and hypothesis.

Henry IV Part 1: Provenance and Performance

Hilary J. Gross '13, *English*

ADVISOR: Yu Jin Ko, *English*

Directing the Shakespeare Society's production of Henry IV Part 1 both informed, and was informed by, my research of the play's performance provenance and critical reception. While no one denies that Henry IV is a rich play both critically and theatrically, arguments regarding its protagonist and genre are far more contentious: Hal is the only possible lead, or his father is, the play is just a comedy, or just a tragedy. But in each case, both are, or at least can be, true. So we attempted to maintain the dynamic balance of Shakespeare's text in performance: rather than choosing one of four major characters to feature in the lead role (either Hal, Henry, Hotspur, or Falstaff) or between genres to elevate (namely drama, comedy, or tragedy), we tried not to choose. If Shakespeare didn't, then neither would we. That challenge belonged to the audience.

From Sumo to Ofuro: An Exploration of Japanese Culture & Society

(panel discussion) Jewett Arts Center 454

Daniele Evangelista Leite da Silva '14, *East Asian Studies and Chemistry*, Maggie M. Feng '16, *Undeclared*, Antoinette A. Garcia '16, *Undeclared*, Alexis B. Kiley '13, *English and Psychology*, Cristian E. Lamas '16, *Undeclared*, Christie H. Lee '14, *East Asian Studies*, Brigitte C. Roper '16, *Undeclared*, Ye-Eun Sung '16, *Undeclared*, Quyen Than Trong '16, *Undeclared*, Alyssa G. Wibisono '13, *Biological Sciences*

ADVISOR: T. James Kodera, *Religion*

During our Wintersession in Japan, our class travelled around the country for three weeks, exploring the many different aspects of aculture composed of both modern and ancient thoughts, beliefs, and practices. We walked the neon-soaked streets of Tokyo, relaxed in the traditional and restorative waters of Miyajima, experienced the spiritual atmospheres of both Buddhist temples and Shinto shrines, and commiserated with the atrocities presented in Hiroshima and Nagasaki. Our diverse group researched about several cultural and social aspects of Japan, including but not limited to environmental influences on Shinto architecture, the plight of the minority Baraku and Zianichi Koreans, the uncertain employment prospects for recent university graduates face, political tensions concerning the war-memorial in Yasukuni Shrine, and the unique religious and historical perspectives on abortion in Japan. The panel will present on these myriad topics in order to provide a wide-reaching introduction to different aspects of contemporary Japan.

The Master of Nuevo Tango: Astor Piazzolla

(long performance) Jewett Arts Center-Auditorium

Ji Yeon Kim '15, *East Asian Studies*, Hui Li '16, *Undeclared*, Claudina X. Yang '14, *Philosophy*

ADVISOR: Jenny Tang, *Music*

Astor Pantaleon Piazzolla was an Argentine composer, and perhaps the most renowned tango musician in the world. He revolutionized the traditional tango, incorporating elements of jazz and classical music, creating a new style termed nuevo tango. The presentation will explore the breaking away from traditional modes of tango music, and its evolution into a highly individualized style of new wave

sounds, influenced by a wide array of Western musical elements such as jazz, improv, and contemporary forms that have proven to be wildly successful. The presentation will be followed by a musical performance of his three well-known piano trio works.

Science and Technology

Biological Chemistry Program Honors Thesis Research Talks

(panel discussion) Pendleton Hall West 117

Biofilms and Light Signaling in *Synechocystis* sp. Strain PCC 6803

Zihan Dong '13, *Biological Chemistry*

ADVISORS: Mary M. Allen, *Biological Sciences*, Jean Huang and Rebecca Christianson, *Biology and Physics* (Olin)

Biofilms are how bacteria naturally exist in nature—enclosed in an extracellular matrix of protein and polysaccharides. The biofilm state protects bacteria against environmental stressors, such as antibiotics and biocides. Confocal microscopy was used to analyze the development of biofilms of two strains of *Synechocystis* sp. strain 6803, a wildtype and motile mutant, which were grown in flow cells. A significant difference was found in terms of their biofilm structures and growth, with wildtype biofilms being lower in height and not exhibiting dense clusters compared to the motile strain. The genomes of both strains were sequenced and then characterized for genetic differences. We also explored the ability of the motile mutant to move towards light, known as positive phototaxis. Our goal was to find the physical conditions required for maximal positive phototaxis in the motile strain.

Regulation of Levels and Localization of the Enzyme Thimet Oligopeptidase in Prostate Cancer Cells by Steroid Hormones

Christa C. DeFries, '13, *Biological Chemistry*

ADVISOR: Adele J. Wolfson, *Chemistry*

The enzyme thimet oligopeptidase (TOP) has the ability to cleave many peptides integral to important biological processes. One of these is gonadotropin-releasing hormone (GnRH), levels of which control the amounts of estrogens and androgens the body produces. To determine the role TOP may play in control of androgen and estrogen production, I treated human prostate cancer cells with varying concentrations of β -estradiol, an estrogen, and evaluated how this treatment

affected cellular TOP levels and localization. Androgens and estrogens have enormous influence on human reproductive function and behavior, and abnormal regulation of these hormones contributes to many diseases. If it is true that TOP influences the production of androgens and estrogens, TOP could be an important component in the process of human reproductive regulation. (Funded by the Roberta Day Staley and Karl A. Staley Fund for Cancer-Related Research Awards)

Signaling Mechanisms and Physical Structure of Biofilm Growth in *Synechocystis* sp. Strain PCC 6803

Jennifer E. Fishbein '13, *Biological Chemistry*
ADVISOR: Mary M. Allen, *Biological Sciences*

Many bacterial species, including the cyanobacterium *Synechocystis* sp. Strain PCC 6803, use the formation of biofilms as a survival mechanism. Biofilms are cell aggregates, which act as a protective barrier by providing nutrient access, increased drug tolerance and metabolic by-product sharing. Biofilms can form both in nature and in human infections, where they are very antibiotic resistant and thus particularly difficult to treat. To form biofilms, many bacterial species use a communication system involving chemical signals. In this study, we investigate the cell-cell communication of this cyanobacterium. The physical structure of the biofilms is also being analyzed. The wild type non-motile cells form a uniform monolayer biofilm while the super-motile mutant cells form pillar shaped biofilms that spread across the surface. Our goal is to gain a better understanding of this ubiquitous and diverse bacterial survival strategy. Research supported by a Jerome A. Schiff Fellowship.

Probing the *Arabidopsis thaliana* chloroplast outer envelope proteome and interactome

Emily M. Shortt '13, *Biological Chemistry*
ADVISOR: Gary C. Harris, *Biological Sciences*

Chloroplasts perform a variety of critical functions in plant cells, including lipid metabolism, protein synthesis, and photosynthesis. For the cell to operate smoothly, these important functions must be effectively integrated and regulated with other processes in the cell. This necessitates the existence of extensive intracellular communication networks. Recent work in a variety of organisms has revealed that networks of protein-protein interactions form the core of most intracellular communication. Efforts to understand how

the chloroplast fits into the plant cell's protein-protein interaction network require an accurate inventory of the chloroplast outer envelope protein population (proteome), which we have worked toward by developing methods to isolate this membrane and identify proteins by mass spectrometry. To detect protein-protein interactions between the chloroplast and other cellular proteins, we have used protein microarray technology with intact chloroplasts as the probe. We have also used bioinformatic tools to generate a virtual chloroplast outer envelope interactome.

Factors Influencing Neurogenesis in the Crayfish, *Procambarus clarkii* (panel discussion) Science Center 104

Zain Fanek '13, *Neuroscience and French*,
Isabelle Gell-Levey '13, *Neuroscience*, Jingjing Li '15, *Neuroscience*

ADVISOR: Barbara Beltz, *Neuroscience*

The crayfish *Procambarus clarkii* is capable of neuronal production in the adult brain. The lineage of neuronal precursors produces cells that will differentiate into olfactory interneurons. However, the 1st-generation neuronal precursors (stem cells) are not self-renewing, and we are therefore hunting for the source that replenishes these stem cells. Our evidence suggests that the hematopoietic system is one source of these cells. Our specific projects therefore focus on defining the relationship between the hematopoietic system and the lineage of cells producing the adult-born neurons. Serotonin, a neurotransmitter, is known to increase the niche cell population. The goals of current research projects are to (1) define the circadian rhythm of serotonin production in the brain using high performance liquid chromatography, (2) test the relationship between the number of hemocytes (blood cells) and niche cells, and (3) characterize cells in the hematopoietic system that are believed to provide the neuronal precursors.

Food is Not Trash: Redefining Wellesley's Waste Culture by Composting (panel discussion) Science Center 277

Ellen Bechtel '14, *Environmental Studies*, Eliana Blaine '13, *Environmental Studies*, Benjamin Chapman '14, *Mechanical Engineering (Olin)*, Shirley Doan '14, *Environmental Studies and English*, Maria Cristina Fernandes '13, *Environmental Studies*, Maia G. Fitzsteven '13, *Environmental Studies*, Olivia Froehlich '14, *Environmental Studies*, Carly Gayle '13,

Environmental Studies, Sylvia Ilabuka '13, *Environmental Studies and Africana Studies*, Mische Kang '13, *Environmental Studies*, Kate Klibansky '13, *Economics and Environmental Studies*, Megan Lambert '14, *Environmental Studies and Mathematics*, Jennifer Lamy '13, *Environmental Studies and Economics*, Kelly Mercer '13, *Environmental Studies*, Gertrude (G.G.) Merkel '13, *Environmental Studies*, Audrey Mutschlechner '13, *Environmental Studies*, Morgan O'Grady '13, *Environmental Studies*, Eugenia Nizkorodov '13, *International Relations (Economics) and Environmental Studies*, Tiana Ramos '13, *Environmental Studies*, Elsa Sebastian '13, *Environmental Studies*, Ada Smith '13, *Environmental Studies and Anthropology*

ADVISOR: Elizabeth DeSombre, *Environmental Studies*

While many colleges across the country already compost, Wellesley does not yet have an institutionalized system for managing the majority of our organic waste. But that is all about to change. A policy from the Massachusetts Department of Environmental Protection will require most institutions in the state to divert organic waste from their waste streams beginning in July 2014. At the request of the Office of Sustainability, the Environmental Studies major capstone class spent the semester researching and developing the most effective strategies to recommend to the college in order to implement campus-wide composting and reduce the amount of food wasted. Wellesley's compliance with the DEP policy would annually divert approximately 500,000 kg of food waste from incineration. Come learn the when, where, who, and how of our strategies for implementing sustainable, responsible, and economically feasible composting methods on campus, and see what changes have already been set in motion.

Small Particles with Big Impacts: Applications of Nanotechnology

(panel discussion) Pendleton Hall West 116

Bao Minh T. Dang '14, *Rebecca D. McClain '13, Chemistry*, *Chemistry*, Stephanie G. Schmitt '13, *Chemistry*

ADVISOR: Nolan Flynn, *Chemistry*

Nanotechnology is the study of materials on the nanometer length scale. Our group explores this area of chemistry as it pertains to biomedicine and nanotechnology. In collaboration with other chemists and biologists, we are creating a multi-purpose nanometer-sized particle that

can target, image, and destroy pancreatic cancer cells. One aspect of this project is creating the core and shell of the particles as well as the functionalizing the shell. Our lab also works on the creation of electrochemically active gold nanoparticles. One of our goals is to use electrochemistry to trigger the assembly of gold nanoparticles into three-dimensional structures. (Research supported by NIH, a Schiff Fellowship, Staley Fund, and Wellesley College)

Wellesley Global Medical Brigades: Honduras, Potrerillos and Guanacaste

(panel discussion) Science Center 278

Nour J. Abdulhay '14, Biological Sciences, Yi Ling Dai '13, Neuroscience, Kristina X. Duan '15, Undeclared, Catherine J. Ha '13, Anthropology, Victoria M. Nguyen '13, Spanish, Ji I. Shin '13, Neuroscience

ADVISOR: *James Moyer, Chemistry*

Global health disparities are a growing concern and need immediate attention. Wellesley's chapter of medical brigades is the only existing active all women's chapter of Global Brigades, the world's largest student-led global health and sustainable development organization. A group of 29 Wellesley students as well as two healthcare professionals successfully completed the college's first ever medical brigade in Honduras in January 2013. Our organization was able to attend to 640 patients in two different communities.

Social Sciences

Our Colleges, Ourselves: Peer Effects of College Students

(short talks) Pendleton Hall East 139

Revisiting Race and Class in Higher Education

Danielle A. Callendar '13, Africana Studies

ADVISOR: *Lee Cuba, Sociology*

Much of the literature on race and higher education neglects to discuss fully the gains black students make during their undergraduate careers. This study seeks to fill this void by focusing on black students at five highly ranked, highly selective liberal arts colleges. It will offer a view of how these students navigate their college campuses and develop their professional and academic goals during and after college. Essentially, the study aims to provide a more nuanced perspective on the influence of race and class on college student academic decisions.

How Women Experience and Acquire Privilege in Elite Liberal Arts Colleges

Priscilla D. Gutierrez '13, Sociology

ADVISOR: *Lee Cuba, Sociology*

Researcher Shamus Khan understands "privilege" as the ability to be at ease in a multitude of social situations and to function facily within these situations. While it is a skill proven to be desirable in both school and the job market, only certain lifestyles and institutions, such as elite boarding schools, have traditionally fostered its development. My thesis research looks at the acquisition and experience of privilege among female students on elite liberal arts college campuses, both single-sex and co-educational. Using longitudinal data from the New England Consortium on Assessment and Student Learning (NECASL), I compare the ways in which female students of different races/ethnicities and socioeconomic statuses experience and acquire privilege. Ultimately, I seek to determine whether this type of embodied cultural capital becomes a tool of social mobility or social reproduction in the lives of college students. (Research supported by a Schiff Fellowship)

Why Women's Colleges?: Reassessing the Benefits of Single-Sex Higher Education for Women

Teresa K. Wisner '13, Sociology

ADVISOR: *Joseph Swingle, Sociology*

In the United States today, young women have access to virtually all of the country's best colleges and universities. However, research suggests that single-sex education may still be beneficial to women in ways that co-education is not. Women's colleges encourage students to pursue non-traditional career paths, offer more female role models and mentoring opportunities, provide more leadership experiences on campus, and cultivate generally supportive campus environments. My thesis research examines the experiences of female students at Wellesley, Smith, Bowdoin, and Bates College, looking specifically at students' major choices, personal aspirations, extracurricular involvement, and social lives to address the question of whether women's colleges are truly more positive places for women. Ultimately, I find that single-sex colleges are exceptional at nurturing confident, successful young women, and suggest that co-educational institutions should look to women's colleges as exemplary models of supportive environments for female students.

Ideological Diversity and Student Experiences at Wellesley College

Zoelle S. Mallenbaum '13, Economics

ADVISOR: *Thomas Cushman, Sociology*

Wellesley is full of strong-minded women with equally strong political views. While conventional wisdom might suggest otherwise, students' views are not homogeneous across campus. This study, based on an Independent Study in the Department of Sociology, explores the relationship between students' political ideologies and their experiences at Wellesley College. Central questions of the study include: Are students with certain ideologies more likely to major in certain departments? How do ideologies shape connections and experiences with professors and other students, both in and out of the classroom? Do students with dissident ideological views have a different experience of Wellesley College than those whose views are more mainstream? What is the relationship between a student's political ideology and her sense of belonging? This study is based on a sample survey of students across campus in order to shed light on these questions. Based on the research, I suggest strategies for informing College policy in order to enhance appreciation and respect for the intellectual and ideological diversity of students at Wellesley.

Suffering and Sadness: Life after Traumatic Events

(short talks) Pendleton Hall West 212

Effect of Pathology on Cognitive Outcome after Anterior Temporal Lobectomy for Treatment of Epilepsy

Brigid E. Prayson '14, Psychology

ADVISOR: *Jennie Pyers, Psychology*

There are many known risk factors that may increase one's risk of cognitive decline following surgical treatment for epilepsy. This project examined the potential risk factor of pathology on cognitive outcome in patients who underwent anterior temporal lobectomies. Specifically, patients with mesial temporal sclerosis (MTS) were compared to patients with dual pathology of both MTS and focal cortical dysplasia. Retrospective statistical analysis was performed on 63 cases using neuropsychological data obtained from routine pre- and post-operative evaluations for epilepsy surgery. Results indicate that there were significant 2-way interactions

(group x time) on several language and memory measures, suggesting that dual pathology might lead to a more favorable postoperative cognitive outcome than MTS only. Potential implications will be discussed.

Crime or Custom? The Questionably Immoral Practice of Female Genital Mutilation

Shruthi V. Kumar '16, Undeclared

ADVISOR: *Thomas Cushman, Sociology*

Every year, 130 to 150 million girls are subject to Female Genital Mutilation (FGM), a painful ritual that involves the cutting of the external genitalia in order to protect a woman's chastity. Not only does this ritual perpetuate gender discrimination, but it also puts women at the risk of disease. Regardless, FGM is still regarded as a significant rite of passage for young women. But do we have the right to label this practice as immoral? Cultural Relativists would argue that activists do not have the right to judge groups that regard FGM as "custom", because morality is culturally dependent; while Universalists would argue that FGM breaches the inalienable rights of women. This presentation will explore the ongoing debate between cultural relativism and universalism, in the context of FGM in rural Somalia. This sociological study will help foster a better understanding of why FGM continues to be a human rights issue, and offers potential solutions to the problem.

Women's Rights in the Face of Acid Attacks: A Case Study of the Tensions between Relativism and Universalism

Alice Y. Liang '16, Undeclared

ADVISOR: *Thomas Cushman, Sociology and Inela Selmovic, Spanish*

Individual members of Islamic fundamentalist groups in areas such as Gaza and Kashmir have recently thrown acid at women for not wearing hijabs, justifying their attacks as a response to the violation of Shari'a law. Not only do these attacks strip away a woman's agency, they cause lifelong scars and stigmatization. Such violations of human rights pose an ethical dilemma. Leaving the issue unaddressed contributes to the perpetuation of systematic violence against women, yet imposing a universal standard of rights on a culture can be seen as a form of cultural imperialism. I argue that human rights and Shari'a law are not mutually exclusive. It is possible to protect

women's bodily rights, while respecting the cultural and religious context in which women live. Resolving the necessary tensions between universalism and relativism demands complex cultural negotiation. This presentation will explore strategies of stopping acid attacks within the context of powerful cultural inducements that normalize violence against women's agency.

The Child is Father to the Man (short talks) Science Center 396

Preschool Peer Pairs: What Predicts Friendship Development?

Paula K. Yust '13, English and Psychology

ADVISOR: *Tracy Gleason, Psychology*

Early friendships are important for later socio-emotional development. Many friendships are reciprocated, but some preschoolers' nominations of friendship are not returned. These unilateral relationships are thought to be precursors to reciprocated friendships. I looked at whether characteristics of children, such as social competence and peer acceptance, and peer dyad characteristics, such as similar interests and relationship features (e.g., amount of support) were positively predictive of unilateral friends becoming reciprocal friends. I interviewed 82 preschoolers twice about their friendships and observed the children to see who frequently played together. Teachers also completed questionnaires on social competence and relationships characteristics. I hypothesized that unilateral friendships between children who had high social competence levels, similar peer acceptance levels, played together frequently, or had positive relationship features would be more likely to become reciprocal friends than unilateral pairs without these characteristics. (Research supported by a Schiff Fellowship)

What Do You Want to Play? The Effect of Teacher Presence and Children's Gender on Social Influence

Kathryn C. Goffin '13, Psychology

ADVISOR: *Linda Carli, Psychology*

Early in life, children learn about social rules and gender norms through observations of others and their own interactions with peers. Children learn that men and women hold different social roles and exert different amounts of social influence. Additionally, children's choices are directly and indirectly influenced by their parents' and teachers' actions. I explored how the gender of

children and the presence of a teacher affect social influence in preschool-aged children. Children watched puppet shows in which a child puppet preferred one version of a toy over another; the shows were presented either with or without a teacher puppet present. Each child's toy preference was recorded. Examining how children react to boy or girl puppets with the presence of an adult will further our understanding of social influence in children.

The Relationship between Altruism and Display Rules: Selflessness and Prosocial Tendencies in Preschool Children

Natalie E. Benjamin '13, Psychology and French, Meredith G. Healy '13, French and Psychology

ADVISOR: *Jennie Pyers, Psychology*

Our research examines the relationship between altruism, which is defined as selfless concern for others, and the understanding of display rules, which dictate the social appropriateness of displaying certain emotions, in preschool children. Previous research suggests a link between these two variables, as they are both related to prosocial tendencies. We devised unique behavioral methods to target and measure preschool children's understanding of these concepts, including a task measuring children's helping behaviors, and a task examining their reactions to undesired gifts. We found that children who display helping behaviors, thus acting altruistically, are more likely to show an understanding of display rules, confirming our hypothesized link between the two tendencies. Our presentation will explore our process and findings, and will address why we believe this link is important for the understanding of child development.

Theory and Research on Freedom: Perspectives on Law, Feminism, and the Professions (panel discussion) Jewett Arts Center 452

Disciplining Intimacy: A Theoretical Exploration of the Relationship Between Stigma and Intimate Labor

Rachel Davis '13, Philosophy

ADVISOR: *Thomas Cushman, Sociology*

"Intimate labor" refers to forms of labor that maintain precise social relations between a worker and multiple customers. This includes occupations like child care, sex work, and domestic care. Intimate

laborers provide services that expose them to sensitive personal information about their clients. Many forms of intimate labor are highly stigmatized, and my research examines the way in which stigmas attached to intimate labor are mitigated through processes of professionalization. I posit that, via their exposure to many people's personal information, workers performing unprofessionalized and under-regulated intimate labors become "nodes" of counter-discourse that constitute sites of aggregated counter-discursive knowledge. I argue that unprofessionalized intimate labor's threat to dominant discourses (e.g. normalizing discourses of sex, childhood, bodily appearance) is neutralized, in the short term, by the discrediting effects of stigma and, in the long term, by professionalization (and, consequently, absorption into normalizing discourses themselves).

A Critical Inquiry into the Meaning of Freedom and Essence in Feminist Thought

Marilynn Willey '14, Classical Civilization

ADVISOR: *Thomas Cushman, Sociology*

I will present my research on feminism as it relates to the philosophical concept of essence and the broader intellectual context from which contemporary feminist doctrines have emerged. My focus is on the relationship between essence and freedom, autonomy, and individualism. I argue that feminist philosophy breaks from traditionalist views of freedom—especially classical liberal views—and instead is derived from a modern post-structuralist viewpoint in which liberation from essence, as opposed to perfection of essence, is a required component of freedom for individuals. In analyzing this aspect of the feminist movement, I will focus on three questions: what "essence" means in the post-structuralist intellectual context; what it means in feminist doctrine; and the effects of this theoretical "liberation from essence" in political movements and social policy in the real world. I argue that the classical liberal ideal—which lies more in the perfection of essence—might be a worthwhile and more nuanced approach to feminism.

The Boundaries of Law: Libertarian Arguments Against Legal Paternalism and Legal Moralism

Xueyin Zhang '16, Undeclared

ADVISOR: *Thomas Cushman, Sociology*

What are the limits of the law? Admittedly, without the rule of law we are doomed to live a life that is, in Hobbesian terms, "nasty, brutish and short". With too much law, however, we risk being encased in what German sociologist Max Weber called the 'iron cage' of legal rationality that vitiates democratic engagement and autonomous decision-making. The use of law as a tool to promote moral ideals or enforce moral obligations overlooks the inherent tension, as noted by Max Weber, between formal law and substantive values. In this presentation, I offer arguments against legal paternalism and legal moralism, and advocate for a legal system that, in Isaiah Berlin's words, "sets the frontiers within which man shall be inviolable".

Three-College Collaboration Wintersession Program: "Consulting with Practically Green"

(panel discussion) Jewett Arts Center 450

Benjamin Cardarelli '15, Finance and Strategic Management (Babson), Victoria C. Rines '15, Biological Sciences, Carla The '15, Psychology, Vikki Tse '15, Political Science

ADVISOR: *Janice Yellin, Art History (Olin)*

How do students from very different educational institutions learn to work together effectively as a team? This past Wintersession, as participants in the Three College Collaboration (Babson, Olin, Wellesley), twelve students from the three respective colleges lived, ate and worked together to participate in a two-week project to help introduce Practically Green, a Boston start-up company that uses social media to encourage more sustainable practices, to college campuses. As student consultants, we conducted surveys and interviews with students, faculty and staff across all three campuses. Results were explored and analyzed to produce a final proposal regarding the viability of Practically Green's entry into the college market at this time. We will also discuss how our diverse backgrounds and institutions' different educational emphases sometimes led not only to 'collisions' that ultimately generated new, creative ideas, but that our institutions also gave us tools for successful collaborative problem solving.

China's Search for Modernity: A View of Shanghai and Beijing (panel discussion) Founders Hall 126

Xiaolu Han '14, East Asian Studies, Kat Yung Keung '14, Economics, Irene C. Kwok '14, Computer Science and Chinese Language & Literature

ADVISOR: *Mingwei Song, East Asian Languages & Literatures*

Our presentation will examine the role globalization has played in the development of the modern Chinese city. We will primarily be focusing on two of China's growing metropolises-- Beijing, the country's political capital, and Shanghai, China's economic center. We will begin with a discussion about the human rights violations surrounding the Beijing 2008 Olympics and segue into the changes both the city and its people have undergone since China's momentous unveiling to the world. We will then move to Shanghai where we will explore, through various novels and films, the effect commercialization has had on youth culture and self-identity. Ultimately, we will delve into the ideas of femininity, generational gaps, materialism, sexuality, and foreign influence in order to present a more comprehensive image of an ever-changing China.

Here: Honor Killings in the United States (film screening) Founders Hall 120

Sarah G. Trager '13, American Studies and Jewish Studies

ADVISOR: *Jennifer Musto, Women's and Gender Studies*

Last Spring, I conducted an independent research project where I examined the cultural practice of honor killings, specifically focusing on the ones being committed in the United States. I reviewed scholarly articles, watched documentaries featuring victims and their families as well as interviewed two sociologists who are familiar with this field. The culmination of my research is a short film which presents all views expressed publicly in the United States about this horrific practice. It is meant to be informational and demonstrate how little America has yet to discover about how to prevent these murders from occurring in the future.