

WELLESLEY COLLEGE

THE

RUHLMAN

RUHLMAN

RUHLMAN

CONFERENCE

A CELEBRATION OF
STUDENT ACHIEVEMENT

APRIL 25, 2012



THE RUHLMAN CONFERENCE 2012

It gives us great pleasure to welcome you to the 2012 Ruhlman Conference. Made possible by the Barbara Peterson Ruhlman Fund for Interdisciplinary Study, the Ruhlman Conference is intended to foster collaboration among students and faculty across the disciplines and to enhance the intellectual life of the College. The event provides an opportunity for students, faculty, staff, friends, family, and alumnae to come together in celebration of student achievement.

Last year, we celebrated the 15th anniversary of the Ruhlman Conference. Some of the participants from the first Ruhlman conference returned to campus and spoke eloquently about how undergraduate research, in general, and their participation in the Ruhlman Conference, in particular, had influenced their lives over the past 15 years. Their words served as a reminder of the important role that the Ruhlman conference plays in the intellectual life of the college.

The Ruhlman conference celebrates intellectual life by sponsoring a communal, public event where students have an opportunity to present their work to an unusually wide audience. By providing an opportunity for public presentation of what is often a private, isolated activity, the conference demonstrates that research can be part of the ongoing conversation in a community of scholars.

Attentive to the diversity of student interest and accomplishment, the Ruhlman Conference includes a variety of formats for the presentation of student work: papers, panels, posters, exhibitions, musical and theatrical performances, interactive teaching presentations, and readings of original work. Representing the work of nearly 300 Wellesley students, the 2012 Ruhlman Conference is organized around three major themes: Humanities, Science and Technology and Social Sciences.

We encourage you to experience the scope and richness of student achievement at the conference and wish to express our thanks and congratulations to all students and alumnae participating in this special event.

The 2011–2012 Program Committee for the Ruhlman Conference

Laura Adamczyk
Alumnae Office

Rukmani Bhatia
Class of 2012

Dennis Boyer
Leadership Gifts

Amy Chandler-Nelson
*Office of the Provost and
Dean of the College*

Alexander Diesl
Mathematics

Sunayana Dyer
Office of Special Events

Ali Fischer
Class of 2013

Hannah Galin
Class of 2013

Evelina Guzauskyte
Spanish

David Olson
Art

Joy Playter
Office of the Class Deans

Erin Richardson
*Computing and Media
Support*

Andrea Sequeira
Biological Sciences

Akila Weerapana
Economics

Kristen Yarnall
*Office of the Provost and Dean
of the College*

A History of the Conference

By Lee Cuba and Adele Wolfson

The first Ruhlman Conference was held on the afternoon of May 1, 1997. Looking back on that day, the 150 students who volunteered to participate in the inaugural conference—and the more than 50 faculty who served as their advisors—were creating a new Wellesley tradition. In the months preceding the conference, members of the program committee had worried that it might be difficult to recruit students to participate in this ambitious communal experiment. Indeed, that was the question on Barbara Ruhlman’s mind throughout much of the year. Once the day of the conference had arrived, however, a new question had come to occupy their minds: What if no one attends? The conference had been organized into concurrent sessions scheduled from 3 to 7 pm and, because no change to the class schedule was made that day, late-afternoon classes overlapped with the first block of conference presentations. At a place already over-populated with lectures, performances and other community events, who would be interested in attending yet another optional event?

Many were. The student, faculty and staff turnout that afternoon was respectable, if not large, and faculty and staff outnumbered students in most sessions. Of greater significance, both those who presented and those who attended the first conference left with the impression that they had participated in something special, urging those in charge of planning the conference to find ways to increase involvement among all constituencies of the college. The following year the conference was scheduled for a day on which no classes would be held, the number of blocks of concurrent sessions was increased, and a community-wide lunch was added. The number of students presenting at the conference rose to 250, the number of faculty and staff advisors doubled (to 100), as did the number of sessions. In the years to follow, the conference would consistently attract between 250-300 student participants sponsored by well over 100 faculty and staff, representing virtually every academic department and program of the college.

Why was the Ruhlman Conference such a success? A student on the first program committee for the conference provided insight into that question when she suggested that “Wellesley was a very academic place, but it wasn’t as intellectual as it might be.” By that we believe she meant that Wellesley students set high academic standards for themselves and their peers, that they worked hard to achieve those standards—but that they spent more time talking about how hard they work than about what they are working on. Although the Ruhlman Conference provided a venue to applaud and celebrate the hard work necessary to produce excellent projects, its focus was on the results of that hard work—the knowledge, understanding and joy that comes through serious intellectual engagement.

More than 15 years later, it is hard to imagine Wellesley without the Ruhlman conference. It is built into our calendar and our consciousness. Students look forward to their presentations as they plan their research projects. Faculty mark the years by remembering which students participated in a Ruhlman panel or poster session. Deans describe the conference to candidates for faculty positions as one of the great selling points of the institution. Other colleges planning student research conferences look enviously at the structure we have built. Part of the joy of the day is the way in which traditional divisions are broken down.

Science talks happen in Pendleton, poetry readings in the Science Center. Panels are created that cross disciplines and make new connections; the audiences are filled with staff, faculty, and students interacting with the presenters and with one another in new ways. And part of the joy comes from Barbara Ruhlman's obvious delight in her creation. The gratitude that flows back and forth between her and the students adds to the special nature of the day and is a manifestation of the connections among generations of Wellesley alumnae. It is not difficult to see why the Ruhlman Conference has become such a valued Wellesley tradition.

Lee Cuba is Professor of Sociology and former Dean of the College. While Associate Dean, he worked with Barbara Ruhlman to develop the plan for the Ruhlman Conference and chaired the program committee from 1997–1999. Adele Wolfson is the Nan Walsh Schow '54 and Howard B. Schow Professor in the Physical and Natural Sciences. She was Associate Dean of the College from 2004–2010 and chaired the program committee.

Conference at a Glance

Themes	9:30–10:40am	11am–12:10pm	Lunch*
Humanities	<p>Dance, Dress, Print, Paint (short talks) JAC 450</p> <p>The Call to Prayer: Religious Spirit Around the World (short talks) SCI 104</p> <p>Femininity, Love, Scar, Farcical Realism: Four Faces of Chinese Literary Modernity (panel discussion) SCI 396</p> <p>The World of Yoshinao Nakada: Introducing "The Schubert of Japan" (long performance) PNW 220 Music Salon</p> <p>We Have Had Singing: A Historical Journey of the Specialty Repertoire the Female Vocal Ensemble (long performance) Jewett Auditorium</p>	<p>Hollywood East (film screening) JAC 450</p> <p>Dear Daughter, My Hopes for You (film screening) JAC 450</p> <p>Storytelling through Song: Three Ways of Writing a Musical on the Life of a Medieval Queen (long performance) Jewett Auditorium</p>	
Science and Technology	<p>Growing Up as an Insect (short talks) FND 120</p> <p>Nanotechnology: Small Matters (panel discussion) SCI 278</p> <p>Waste Reduction: Ensuring Wellesley's Pursuit of Sustainability Doesn't End Up in the Trash (panel discussion) PNE 239</p> <p>Hacking for the Community: How to Build a System in One Day? (panel discussion) PNE 339</p> <p>Baaing, Strumming, and Vibrating: The Journey of Three Little Mice (panel discussion) PNW 117</p>	<p>Getting Hot, Being Eaten, & Getting There: Stories of Species (short talks) PNW 117</p> <p>Escaping & Expanding, Plants & Fish (short talks) PNW 116</p> <p>Drinking from the Fire Hose: Dealing with Large Datasets (short talks) PNW 212</p> <p>Games, Visualizations, and Experiments - Three Ways to Understand Computer Security Better (panel discussion) FND 120</p>	
Social Sciences	<p>Women: Beauty, Power, Work & Politics (short talks) PNW 212</p> <p>Pondering the Self and Society (short talks) PNE 139</p>	<p>No Way! ¡Si, Güey!: Arizona's S.B. 1070 and Other (Un)believably Racist Anti-Immigrant Legislation (interactive teaching presentation) PNE 239</p> <p>The Social Paradox In Contemporary Korea: Exploring Korean Youth Culture (panel discussion) SCI 104</p> <p>Changing the World We Live In (short talks) PNE 139</p> <p>Stirring the Melting Pot: Understanding American Culture (short talks) PNE 339</p> <p>And Justice for All: From the Obese to the Elderly (short talks) SCI 278</p> <p>Building and Breaking an Institution (short talks) SCI 396</p>	

key: FND—Founders Hall
 JAC—Jewett Art Center
 PNE—Pendleton East
 PNW—Pendleton West
 SCI—Science Center

** All members of the Wellesley College community are invited to enjoy lunch on the Wang Campus Center lawn. (In the event of inclement weather, the lunch will remain in the same tented service location with the Campus Center and Alumnae Hall as indoor rain locations. Light lunchtime entertainment provided by The Blue Notes, The Tupelos, and the Wellesley Widows, in the vicinity of the lunch tent.)*

1:30–2:40pm	3–4:10pm	4:30–5:40pm
<p>The Kids Are Alright (short talks) JAC 450</p> <p>Ether Wind (exhibition) JAC Art Gallery</p> <p>Space, Place, and Home: How Does Space Become Place and Place Become Home? (exhibition) JAC Art Gallery</p> <p>Taking Up Space: Interactions Between Body & Environment (exhibition) JAC Art Gallery</p> <p>Round Robin: A Print Exchange (exhibition) JAC Art Gallery</p> <p>Deconstructing Text: Reconfiguring the Poetry of Wendell Berry in Order to Challenge and Transform Meaning (exhibition) JAC Art Gallery</p> <p>A Horizontal Search: Squaring Away American Mystery (exhibition) JAC Art Gallery</p> <p>"And All the Men and Women Merely Players": A Year of Theatre at Wellesley College (Long Performance) Ruth Nagel Jones Theatre in Alumnae Hall</p> <p>Musical Performance (long performance) Jewett Auditorium</p>	<p>The Woman, the Warrior, and Love in Asia (short talks) SCI 396</p> <p>Wellesley Treasures: Davis, French House & Special Collections (short talks) FND 120</p> <p>Critical Interpretations: The Story Within the Story (short talks) SCI 104</p> <p>Musical Performance (long performance) Jewett Auditorium</p>	<p>Persuasive Images: Art, Visual Culture, and Everyday Belief (panel discussion) PNW 212</p> <p>Ancient Times: Modern Dilemmas (short talks) SCI 104</p> <p>Forging an Identity in a Hostile World (short talks) SCI 278</p> <p>Two Musical Performances (short performances) Jewett Auditorium</p> <p>The World of Jazz Strings: Changing, Innovating and Honoring a Musical Tradition (short performance) PNW 220 Music Salon</p>
<p>POSTER SESSIONS SCI Focus</p> <p>Eat & Run (and Don't Forget to Express Your Genes) (short talks) PNW 117</p> <p>ForeBrain Talks (short talks) PNW 116</p> <p>What happens when you apply Computer Science to Biology?: Creating systems for Improving the Scientific Process (panel discussion) PNE 339</p> <p>It's Easy as A-B-C: Learning how to Invent Mobile Apps for the Android (panel discussion) SCI 278</p> <p>Membrane Mayhem: Investigating Protein-Lipid Interactions (panel discussion) SCI 104</p>	<p>Modeling, Math, and Molecules (short talks) PNW 116</p> <p>Child Birth, Neuron Death (short talks) PNE 139</p> <p>Methanol Radiolysis of Astrochemical Interest (panel discussion) PNE 339</p>	<p>Still the Most Attractive Lab at Wellesley: Probing Biomedical Problems with Magnetic Resonance (panel discussion) SCI 396</p> <p>Control of Biology by the Organic Chemist (panel discussion) PNW 116</p> <p>Molecular Matchmaking: How Do Proteins Find Each Other? (panel discussion) PNE 139</p> <p>Engineering for Humanity: Helping Elders Age in Place through Partnerships for Healthy Living (panel discussion) FND 120</p>
<p>All About the Incentives (short talks) PNE 239</p> <p>Making Sense of the World (short talks) PNE 139</p> <p>Buying In: Exploring the Social Meanings of Commodities (panel discussion) SCI 396</p> <p>All is Fair in Trade and War? A Tale of Three U.S. Trade Disputes (panel discussion) FND 120</p> <p>So, You Want to Invent a Language? (panel discussion) PNW 212</p>	<p>Student Becomes the Teacher: Understanding How We Learn (short talks) JAC 450</p> <p>Relax! The Social and Physical Effects of Stress (short talks) PNW 212</p> <p>Keeping the Peace: Global Struggles (short talks) PNE 239</p> <p>The Politics of Democracy & Democratization of Politics (short talks) SCI 278</p> <p>Watch Your Language (short talks) PNW 117</p>	<p>Health, Wealth, and the Pursuit of Happiness (short talks) PNE 339</p>

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SCI—Science Center

Conference Schedule

8:30–9:30am
Continental Breakfast

Continental breakfast served in Pendleton Atrium and Science Center Sage Lounge.

9:30–10:40am
Humanities

Dance, Dress, Print, Paint (short talks) Jewett Art Center 450

The Fallacy of the Western Narrative: The Un-Naturalist Art of Walton Ford

Jaeun Ahn

"Little or No Influence": The Importance of Costuming

Amanda Braun

Sarah Wyman Whitman & the Art of the Commercial Book in Boston

Molly Eckel

Merce Cunningham: Accidental Icon

Jennifer Harris

The Call to Prayer: Religious Spirit Around the World (short talks) Science Center 104

Changing the Landscape of Global Christianity: The Twentieth Century Explosion of Christianity in Korea

Jaimie Crumley

Development of *Kaji Kito* in Nichiren Shu Buddhism

Kyomi Igarashi

Soldiers for Christ: The Practice and Theology of Dominionism in America

Sarah Miller

Protestant & Confucian Ethics and the Spirit of Capitalism in Wenzhou, China

Grace Tien

**Femininity, Love, Scar, Farcical Realism: Four Faces of Chinese Literary Modernity
(panel discussion) Science Center 396**

Ariel Chao, Helen Yinan Ge, Natalie Griffin, Michelle Vogelzang

Scar Literature: Transcending the Past

Ariel Chao

Love and Intimacy in Modern Chinese Literature

Helen Yinan Ge

The Evolving Status of Feminism in Chinese Literature

Natalie Griffin

The Construction of Farcical Realism

Michelle Vogelzang

**Queering Sounds and Movements: Exploring Queer-Identified Musicians and Queer Social
Movements (short performance) Pendleton Hall West 116**

S.J. Gray

**The World of Yoshinao Nakada: Introducing "The Schubert of Japan"
(long performance) Pendleton Hall West 220 Music Salon**

Eriko Houlette, Tiffany Chan, and Michiko Inouye

We Have Had Singing: A Historical Journey of the Specialty Repertoire the Female Vocal Ensemble
Featuring the Wellesley College Chamber Singers and Choral Scholars
Christine Chen, Emma Rackstraw, Katherine Siegel, Kendrick Smaellie, and Emily Weddle

Science & Technology **Growing Up as an Insect (short talks) Founders Hall 120**

From Metamorphosis to Puberty: The Role of Ventral Veins Lacking (VVL) in Juvenile Hormone Regulation
CeCe Cheng

To Molt or Not to Molt: The Tale of A Hungry Caterpillar
Karen Kemirembe, Kate Liebmann

These Genes Do an Insect Good: Investigating the Mechanisms of Regeneration in the Flour Beetle, *Tribolium castaneum*
Kyung Hwa Lee

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

Nanotechnology: Small Matters (panel discussion) Pendleton Hall West 116
Olivia Hendricks, Lisa Jacob, Young-Ah Lee, Allison Yee

Waste Reduction: Ensuring Wellesley's Pursuit of Sustainability Doesn't End Up in the Trash (panel discussion) Pendleton Hall East 239

Vanessa Barrera, Randelle Boots, Genea Foster, Melissa Gallant, Isabella Gambill, Phoebe Handler, Dominique Hazzard, Linda Hsu, Shilpa Idnani, Morgan McKinney, Natalia Ospina, Pin Pravalprukskul, Amanda Smith, Whitney Smith, Kelli Stephens, Vivienne Tateyuskanskan, Jessica Vandenberg, Julie Vining, Florence Wangüi Kamonji, Carolyn Whitlock, Ellen Willis-Norton, Janna Zimmermann

Hacking for the Community: How to Build a System in One Day? (panel discussion) Pendleton Hall East 339

Caroline Gallagher, Nora McKinnell, Karen Su, Kristian Tran

Baaing, Strumming, and Vibrating: The Journey of Three Little Mice (panel discussion) Pendleton Hall West 117

Michelle Ferreirae, Taili Feng, Casey Grote, Lara Helm, Margaret Ligon, Heidi Wang, Wendy Xu

Social Sciences **Women: Beauty, Power, Work & Politics (short talks) Pendleton Hall West 212**

Evaluating Female Engagement Team Effectiveness in Afghanistan
Anna Coll

"Can We Do It? : Maternity Leaves and Women's Labor Market Outcomes"
Meaghan Maher

Bustles, Ruffles, and Bloomers: Belle Epoque Fashion and New Social Roles for French Women, 1880–1914
Claire McRee

Personality, Sexual Attitudes, and Unrestricted Sociosexual Behavior in College Women
Marussia Role

Pondering the Self and Society

(short talks) Pendleton Hall East 139

Philosophy of Disability: A Reconsideration of the Strawsonian View of

Reactive Attitudes in an Employment Scheme

Hannah Allen

Captivating Albertine: Desire, Recognition, and the Problem of Intersubjectivity in

Proust's À La Recherche du Temps Perdu

Olivia Brown

Effects of a Pretend Play Intervention on Executive Functioning Tasks: Self-Transformation

Using a Cape with Special Powers

Karina Chung, Aryanne de Silva

10:40–11am Break

Break Continental breakfast served in Pendleton Atrium and Science Center Focus.

**11am–12:10pm
Humanities**

Hollywood East (film screening) Jewett Art Center 450

Alison Brace

Dear Daughter, My Hopes for You (film screening) Jewett Art Center 450

Jda Gayle

Time Zones (literary reading) Pendleton Hall East 239

Hallie Santo

**Storytelling through Song: Three Ways of Writing a Musical on the Life of a Medieval Queen
(long performance) Jewett Auditorium**

May-Elise Martinsen

Science & Technology

Getting Hot, Being Eaten, & Getting There: Stories of Species

(short talks) Pendleton Hall West 117

Spatial Patterning of Herbivory

Julia Adams

**Behavioral and Physiological Changes in Honey Bee (*Apis mellifera*) Queens during
a Swarming Event**

Victoria Ellis

Studying the Biology of Wolbachia, the Male-hating Bacteria

Heidi Park

**When and Where: Divergence Times and Colonization Tracks of Darwin's Darkling
Beetles in the Galápagos Archipelago**

Julia Wucherpfennig

Escaping & Expanding, Plants & Fish (short talks) Pendleton Hall West 116

**Comparing the Photoprotective Importance of Nonphotochemical Quenching across
a Range of Plant Species**

Mia Howard, Jennifer Yang

Tip Growth: Assessing the Functional Equivalence of COW1 in *A. thaliana* and *P. patens*

Jessica Lee

Catching Nemo: Fish Escape Strategies and Performance

Allison Robbins, Janet Jeong

Determining the Importance of Two Photoprotective Mechanisms in Arabidopsis thaliana When Exposed to High Light Stress Treatments

Katrina Soriano

Drinking from the Fire Hose: Dealing with Large Datasets
(short talks) Pendleton Hall West 212

Video Summarization: How to Understand Hours of Video in Seconds

Caroline Gallagher

Launching Environmental Modeling into the 21st Century: GUI Based Multi-Variable Environmental Risk-Assessment

Shilpa Idnani, Madeleine Adams

Investigating the Structural Determinants of Electrostatic Binding among Protein-protein Complexes: A Systematic, Large-scale Computational Study

Emma Nechamkin

Social Media: Free Speech and Anonymity for Exposing the Narco Conflict in Mexico

Yesenia Trujillo

Games, Visualizations, and Experiments - Three Ways to Understand Computer Security Better
(panel discussion) Founders Hall 120

Jie Han, Marie Vasek, Era Vuksani

Social Sciences

No Way! ¡Si, Güey!: Arizona's S.B. 1070 and Other (Un)believably Racist Anti-Immigrant Legislation
(interactive teaching presentation) Pendleton Hall East 239

Briana Calleros

The Social Paradox In Contemporary Korea: Exploring Korean Youth Culture
(panel discussion) Science Center 104

Ji-Su Park, Grace Song, Sulamita Yang

Changing the World We Live In
(short talks) Pendleton Hall East 139

Medieval Culture, Agriculture, and Climate: A Scientific History of Human-environment Relationships

Genevieve Goldleaf

Organic Synthesis of Novel Sulfur-containing Antitubercular Agents

Kathryn Jackson, Amelia Williams

From the Village to the City: The Building of India's Post-independence Utopias

Ikuno Naka

Strategies of Urban Renewal in Modern Spain

Judee Utob

Stirring the Melting Pot: Understanding American Culture
(short talks) Pendleton Hall East 339

Cross-cultural Exchanges between France and America in the Letters of the Artist Anne Whitney

Lia Dawley

Long, Tall Texan: Whiteness, Gender, and Pop Culture Representations of Texas Rangers

Kerry Knerr

Counterculture without a Cause: Hipsters and Commodified Subcultures

Karin Robinson

Asians in America: Compiling History on the Web

Samantha Wu

And Justice for All: From the Obese to the Elderly

(short talks) Science Center 278

Aging Justice for Elderly Korean American Women: A Feminist Bioethics Framework

Gena Hong

The Representation of Women in Television, On- and Off-Screen

Kathleen Leonard

Radical Possibilities: Independent Media Production and Contemporary Reproductive Justice Activism

Anna Weick

Building and Breaking an Institution

(short talks) Science Center 396

Pedagogies of Microfinance: Contextualizing and Understanding the Impact of Financial Education Programs in Latin America and in India

Ana Plascencia Casillas

The Effect of Inheritance Rules on Marriage and Dowries in India

Elizabeth Gilmartin

The Special Court for Sierra Leone: A Critical Analysis of Efforts to Address Impunity

Charlotte Hulme

Follow the Money: Catholic Giving after the Boston Clergy Abuse Crisis

Rachel Salmanowitz

**12:10–1:30pm
Break**

All members of the Wellesley College community are invited to enjoy lunch on the Wang Campus Center lawn. (In the event of inclement weather, the lunch will remain in the same tented service location with the Campus Center and Alumnae Hall as indoor rain locations. Light lunchtime entertainment provided by The Blue Notes, The Tupelos, and the Wellesley Widows, in the vicinity of the lunch tent.)

**1:30-2:40pm
Humanities**

**The Kids Are Alright
(short talks) Jewett Art Center 450**

Look, That's Me!: Children in Contemporary American Photography

Stephanie Anklin

Pathway Consumption on a Budget

Evelyn Haro

The Making of a Classic: Louisa May Alcott, her Novels, and Modern Media

Hayley Lenahan

"Stories about Himself": Forgetfulness, Stories, and Power in Peter Pan

Abigail Murdy

Ether Wind

(exhibition) Jewett Art Gallery

Katlyn Bloomfield

Space, Place, and Home: How does Space become Place and Place become Home?

(exhibition) Jewett Art Gallery

Zsofia Schweger

Taking Up Space: Interactions Between Body & Environment (exhibition) Jewett Art Gallery

Artemis Jenkins

Round Robin: A Print Exchange

(exhibition) Jewett Art Gallery

Marisol Ardon, Katlyn Bloomfield, Kimberly Chang, Beatrice Denham, Serena Eastman, Danielle Ezor, Nicole Gebriel, Emily Lin, Elena Mironciuc, Yoojin Park, Rebecca Spilecki, Kara Templeton

A Horizontal Search: Squaring Away American Mystery

(exhibition) Jewett Art Gallery

Lucy Cleland

"And All the Men and Women Merely Players": A Year of Theatre at Wellesley College

(Long Performance) Ruth Nagel Jones Theatre in Alumnae Hall

Members of the Wellesley College Theatre Community, Directors, and Performers

Musical Performance (long performance) Jewett Auditorium

Janet Jeong, Claudina Yang, Michiko Inouye, Audrey Wozniak, Lily Kim, Graeme Durovich, and Eleanor Brown

Science & Technology

POSTER SESSIONS

Science Center Focus

The Effect of Steroid Hormones on Enzymes in Prostate Cancer Cells

Rutendo Gambe, Melissa D'Andrea

Hormone Effects on the Enzyme Thimet Oligopeptidase in Prostate Cancer Cells

Christa DeFries

The Colonial New England Kitchen Garden: Historical Urban Agriculture

Julia Di Cicco

Synthesis of Novel Ethyleneglycol-thiolated Electroactive Molecules for Surface Modification of Gold Nanoparticles

Olivia Hulme, Kellen Kartub, Ji Shin

It is All in the Genes: Genetic Signatures of Habitat Fragmentation in the Endemic Populations of Isabela Island, Galápagos

Adrienne Cheng, Kara Lu, Blair Uhlig

Progress toward the Total Synthesis of the Natural Product Angelmarin

Nicole Spiegelman

Thimet Oligopeptidase is Carried by Cellular Microvesicles in the Cell Culture Supernatants of Prostate Cancer Cells

Yu Liu

Biomimetic Modeling of the Active Site of Soluble Methane Monooxygenase (sMMO)

Chan Myae Myae Soe

Design, Synthesis and Evaluation of a Novel Series of Isoprenylated Coumarins as Promising Pancreatic Cancer Therapeutics

Maria Jun, Alyssa Bacay, Julia Solomon

The Role of PATL1 and PATL2 in Plant Vascular Development

Elze Rackaityte, Emily Cockey

Purification and Enzymatic Characterization of Chitinase: Comparison of Fruit Enzymes

Catherine Cheng, Leah Clement, Myriam Taibi

Cloning, Expression, and Purification of an Affinity-tagged RapA Protein

Amy Goodale, Kyomi Igarashi, Emily Shortt

Examination of the Amyloid Propensities of Model Proteins: A Study of Protein Folding Pathways and the Regulation of Amyloid Formation

Christa DeFries, Serena Liu, Hayley Malkin, Shabeen Rangwalla, Daniela Rios

Eat & Run (and Don't Forget to Express Your Genes)

(short talks) Pendleton Hall West 117

Influence of Diet on Lead Metabolism and Fate: Linking Dietary Deficits and Risk of Lead Poisoning

Phoebe Handler

You Are What You Eat (and Do): An Epigenetic Study on Diet, Exercise and Obesity Genes

Constance Oblinger

Risk Factors Associated with Athletic Injuries in Division III Collegiate Athletes

Katrina Stearns

ForeBrain Talks

(short talks) Pendleton Hall West 116

Rhythm and Spoken Word: How a Language's Natural Pulse may Aid in Perception and Memory

Dana Bullister

Modulation of Neuronal Spiking Activity in Frontal and Parietal Cortices during Auditory Detection

Katie Eyring; Kia Salehi

Gamma Coherence as a Neural Correlate of Attention in Rats

Linnea Herzog

Emergence of Human Episodic Memory and Future Thinking

Michelle Lee

What Happens When you Apply Computer Science to Biology?:

Creating Systems for Improving the Scientific Process

(panel discussion) Pendleton Hall East 339

Taili Feng, Michelle Ferreira, Casey Grote, Sirui Liu, Kelsey Tempel, Heidi Wang, Wendy Xu

It's Easy as A-B-C: Learning how to Invent Mobile Apps for the Android

(panel discussion) Science Center 278

Maki Kato, Charlene Lee, Mariam Qazi, Sonali Sastry, Ruxin Xu

Membrane Mayhem: Investigating Protein-Lipid Interactions

(panel discussion) Science Center 104

Maria Bustillo, Amanda Daigle, Alexandra Fischer, Julia Klaipts, Elizabeth Lawler, Kathryn Pavia, Penny Wang, Amy Zhou

Social Sciences **All About the Incentives**
(short talks) Pendleton Hall East 239

The Volunteer's Dilemma: An Evolutionary Analysis

Divya Gopinath

How does Mortgage Credit Affect Low-income Communities?

Tessa Johnson

Fiscal Interventions and Their Effects on Voter Behavior: A Study of Programa de Asignación Familiar (PRAF) in Honduras

Nandita Krishnaswamy

The Effect of the Minimum Wage on the High School Dropout Rate

Anna Morris

Making Sense of the World
(short talks) Pendleton Hall East 139

Four Faces of Extraversion and Perception of Expression: A Comparison of the Definitions of Extraversion and other Aspects of Self-Concept to Nonverbal Decoding

Julia Denardo Roney

Relationship between Stereo and Motion Cues in Depth Perception

Da In Kim

Social-Emotional Development in Deaf Children Ages Four to Seven

Jennifer Lu

Does Iconicity Matter? Deaf and Hearing Children's Understanding of Iconic Signs

Rachel Magid

Buying In: Exploring the Social Meanings of Commodities
(panel discussion) Science Center 396

Takako Ebara, Una Graonic, My-Co Huynh, Christine Joo, Camden Louie, Christina Moon, Anne Myers, Ji-Su Park, Karin Robinson, Zakiyyah Sutton

All is Fair in Trade and War? A Tale of Three U.S. Trade Disputes
(panel discussion) Founders Hall 120

Hee Soo Chung, Anna Coll, Mengyu Huang, Ran Ji, Elaine Kim, Lianna Lee

So, You Want to Invent a Language?
(panel discussion) Pendleton Hall West 212

Taylor Bass, Rachel Haberman, Crystal Luttrell, Alexandra Ostolaza, Ariel Robinson

2:40-3:00pm Break *Refreshments served in Pendleton Atrium and Science Center Focus.*

3:00-4:10pm **The Woman, the Warrior, and Love in Asia**
Humanities (short talks) Science Center 396

India in Love: A Study of the Changing Nature of Love, Sex and Marriage in India

Viveka Bhandari

Combating Religious Communalism with Theatre: Mahesh Dattani's Final Solutions

Sohini Pillai

"Good Wife, Wise Mother": Women's Roles within Japanese Society

Carter Rice

Blood and Honor: Deconstructing the Warrior in East Asian Cinema

Jennifer Yoo

Wellesley Treasures: Davis, French House & Special Collections

(short talks) Founders Hall 120

The Life of a 15th Century Manuscript: Wellesley College Manuscript 8

Valentina Grub

Exploring Origin, Purpose, and Design of Textile fragments from the James Jackson Jarves Collection

Andrea Gumushian

Dem Heim to La Maison Française: A History of 33 Dover Road

Rachel Swengel

Critical Interpretations: The Story Within the Story

(short talks) Science Center 104

**"A Separate Peace": Reading the First World War in Ernest Hemingway's In Our Time
and A Farewell to Arms**

Esther Kim

Defined by Boundaries: The City in Fortunata y Jacinta and Bleak House

Claire Merrill

Thomas Hardy and the Modernization of Agriculture

Meredith Rubl

Musical Performance (long performance) Jewett Auditorium

Sara Li, Kathy Liu, Lucy Liu, Suyun Lee, Serena Liu, and Irene Pang

Science & Technology

Modeling, Math, and Molecules

(short talks) Pendleton Hall West 116

Modeling the Carbon Monoxide Spectrum

Lucy Archer

Sourcing the Surface of the Asteroid Vesta: Here, There, or Everywhere?

Isabelle Erb

Universal Cycles for K-subsets of an N-set

Melinda Lanius

Child Birth, Neuron Death

(short talks) Pendleton Hall East 139

Changing Faces? Facial Asymmetry and Ovulation

Julie Bass

Understanding Neurodegeneration in Diabetes: Progesterone Action in the Peripheral Nervous System

Rebecca Muwanse, Sarah Finkelstein

Displaced People, Emplaced Births: Medicalized Childbirth in the Tibetan Diaspora

Shannon Ward

Methanol Radiolysis of Astrochemical Interest

(panel discussion) Pendleton Hall 339

Mavis Boamah, Kristal Sullivan, Farrah Yhee

Social Sciences

Student Becomes the Teacher: Understanding How We Learn

(short talks) Jewett Art Center 450

The Squeaky Wheel

Gissell Castellon

Generating Standing Wave Understanding: Designing an Introductory Physics Lab

Hannah Herde, Deepika Ranjan

Reconsidering Math Gender Stereotypes in a Single-Gender College Context

Julia Martin

Science Outreach: From Student in the Classroom to Teaching Middle School Girls

Amy Wolkin

Relax! The Social and Physical Effects of Stress

(short talks) Pendleton Hall West 212

A Critical Review of Mindfulness-based Treatment for Combat-related Post-traumatic Stress Disorder

Jiun-Yiing Hu

Sensitivity to Socioeconomic Status as a Predictor of Stress Level

Claire Lee, Lydia Mathewson

Friendship Satisfaction as a Moderator between Co-rumination and Stress

Rebecca Richardson, Charleen Wilder

The Effect of Sociocultural and Maternal Pressures Relating to a Thin Body Type on Female Students' Body Image Satisfaction and Eating Behaviors

Cathy Zhang, Emma Townsend-Merino

Keeping the Peace: Global Struggles

(short talks) Pendleton Hall East 239

The U. N. in Somalia (1992-1995): History of a Military Humanitarian Intervention

Ayan Ali

Lessons for Tibet: A Comparative Analysis of Nonviolent Movements in India, US and Egypt

Tenzin Dongchung

Defying "Dirty Work": Custodial Workers and Union Organizing at Colleges and Universities

Claire Fogarty

African Unification and Economic Integration: Lessons from Historical Challenges and Current Opportunities

Samantha Malambo

The Politics of Democracy & Democratization of Politics

(short talks) Science Center 278

Reasons Behind the Rise of Julius Malema

Samantha Crowell

Yes We Can: The Democratizing Impact of Social Media on Political Organizing

Elizabeth Pan

Assimilation or Subversion: Re-appropriating Cultural Myths in the American Master Narrative

Anna Talley

The Foreign “Other”: Uses of the International Context in Political Propaganda of England during the Late Seventeenth Century

Hilary White

Watch Your Language

(short talks) Pendleton Hall West 117

Identifying Idiosyncratic Phonemes in Korean-English Bilinguals: Production of Constructed Vowels

Yoolim Kim

Rapid Prototyping for Everyone

Ana Smaranda Sandu

Watermelon, Honeydew, and Antelope: An ERP Study of Semantically Anomalous but Phonologically Expected Words in Highly Constrained Sentences

Laura Stearns

Improving Types in Block-based Programming Languages

Marie Vasek

4:10-4:30pm Break

Refreshments and hors d'oeuvres served in Pendleton Atrium and Science Center Focus.

**4:30-5:40pm
Humanities**

**Persuasive Images: Art, Visual Culture, and Everyday Belief
(panel discussion) Pendleton Hall West 212**

Nicole Gebriel, Alexandria Icenhower, Linnea Johnson, Mische Kang, Darcy Kupferschmidt, Laura Marin, Tanushree Naimpally, Emma Weinstein-Levey

Ancient Times: Modern Dilemmas

(short talks) Science Center 104

Satire, Social Identity, and Classical Tradition: Paideia in Lucian

Lynn Gallogly

The Diffusion of Luxury in Ancient Rome

Mannat Johal

Cross-Dressing Martyrs: The Gender Dynamics of Paul and Thecla's Spiritual Love

Sara Putterman

Forging an Identity in a Hostile World

(short talks) Science Center 278

From Israelite to Jew: Anti-Semitism in Vichy France and its Impact on French Jewish Identity after WWII

Rukmani Bhatia

“Awakening” Country and Faith: The Construction of Sino-Muslim Histories and Identities in the Early Twentieth Century

Mengyu Huang

Creating Culture: Transculturation and Identity in Cuba

Nia Phillips

The Chinatown Squad: The Policing of Belonging in Late Nineteenth-century San Francisco

Rachel Shuen

Two Musical Performances (short performances) Jewett Auditorium

Theme and Creativity: Lutoslawski's Paganini Variations

Michelle Lam

Para las Seis Cuerdas: La Milonga y la Guitarra

Adelene Lai and Pin Pravalprukskul

The World of Jazz Strings: Changing, Innovating and Honoring a Musical Tradition

(short performance) Pendleton Hall West 220 Music Salon

Victoria Boyd, Julia Cohen, Serena Eastman, Elizabeth Lawler, Kyung Hwa Lee, Emily Nice,

Allyson Pyers, and Laura Stearns

Science & Technology

Still the Most Attractive Lab at Wellesley: Probing Biomedical Problems with Magnetic Resonance (panel discussion) Science Center 396

Yi Ling Dai, Stephanie Huang, Palig Mouradian, Rachel Parker, Heather Pearson, Jasmine Rana

Through the Looking Glass: a Neurochemical and Behavioral Investigation of a Mouse Model of Schizophrenia

Stephanie Huang, Palig Mouradian, Heather Pearson

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

Yi Ling Dai

A Multifunctional Nanoparticle for Targeted Tumor Therapy

Jasmine Rana

Launching a Novel fMRI Study of Memory Acquisition and Vocal Learning in the Songbird Model

Rachel Parker

Control of Biology by the Organic Chemist (panel discussion) Pendleton Hall West 116

Shoshana Bachman, Erika Buckle, Kristen Hobbs, Elizabeth Regan, Hannah Stone, Ashton Vattelana

Molecular Matchmaking: How Do Proteins Find Each Other?

(panel discussion) Pendleton Hall East 139

Amelia Kreienkamp, Lucy Liu, Priyanka Nakka, Helena Qi, Ying Yi Zhang

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

(panel discussion) Founders Hall 120

Tiffany Chan, Elizabeth Doyle (Olin), Sharon Grimshaw(Olin), Janie Harari (Olin), Christine Keung, Melisa

Lopardo (Olin), Louis Yee (Olin), Shane Skikne (Olin), Margo Sulmont, Sophia Utset-Ward (Olin), Marie

Watanabe, Jeremy Woo (Olin/National University of Singapore)

Social Sciences

Health, Wealth, and the Pursuit of Happiness

(short talks) Pendleton Hall East 339

The Effect of Tort Reform on Cancer Treatment and Outcomes

Emily Cuddy

How do the Poor Use Informal Saving and Lending Mechanisms to Cope with Droughts?

A Look into the Role of ROSCAs in Ethiopia

Ypsse Kim

Is More Always Better? Mortgages, Debt, and Social Class

Morgan Johnstonbaugh

The Effect of Health Care Reform on Retirement: Evidence from Massachusetts

Gauri Subramani

Conference Planner

	Presentation 1	Presentation 2	Presentation 3	Presentation 4
9:30–10:40am	Topic:	Topic:	Topic:	Topic:
	Presenter(s):	Presenter(s):	Presenter(s):	Presenter(s):
	Location:	Location:	Location:	Location:
10:40–11am	BREAK			
11am–12:10pm	Topic:	Topic:	Topic:	Topic:
	Presenter(s):	Presenter(s):	Presenter(s):	Presenter(s):
	Location:	Location:	Location:	Location:
12:10–1:30pm	LUNCH			
1:30–2:40pm	Topic:	Topic:	Topic:	Topic:
	Presenter(s):	Presenter(s):	Presenter(s):	Presenter(s):
	Location:	Location:	Location:	Location:
2:40–3pm	BREAK			
3–4:10pm	Topic:	Topic:	Topic:	Topic:
	Presenter(s):	Presenter(s):	Presenter(s):	Presenter(s):
	Location:	Location:	Location:	Location:
4:10–4:30pm	BREAK			
4:30–5:40pm	Topic:	Topic:	Topic:	Topic:
	Presenter(s):	Presenter(s):	Presenter(s):	Presenter(s):
	Location:	Location:	Location:	Location:

Please note that people will be leaving or entering the room between or even during presentations.

Frequent sources of support for student/faculty research:

Brachman Hoffman Fund

Elizabeth Davis Cook Student Research Fund

Pamela Daniels '59 Fellowship

Educational Research and Development Committee

Virginia Fiske Fund

Howard Hughes Medical Institute

IBM Research Fund

Amabel Boyce James Fund for Summer Research in the Sciences

Keck Northeast Astronomy Consortium Grant

Sara Langer Fund for Research in Geosciences

John and Elizabeth Alden Little Science Fund

Janina A. Longtine Fund for Summer Research in the Natural Sciences

Massachusetts Space Grant Consortium Grant

Georgeanne Miller Mulhern Fund for Student/Faculty Research in the Sciences

National Institutes of Health

National Science Foundation

Office of the Provost and Dean of the College

Barbara Peterson Ruhlman

Jerome A. Schiff Fellowships

Joan and Herbert Schilder Student Research and Travel Fund

Staley Fund for Cancer-Related Research

Robert and Karl Staley Fund

Fund for Summer Research in the Social Sciences

Humanities

Dance, Dress, Print, Paint
(short talks) Jewett Art Center 450**The Fallacy of the Western Narrative:
The Un-Naturalist Art of Walton Ford***Jaean Ahn '12, Art History*
ADVISOR: *Patricia Berman, Art*

This project examines art by Walton Ford (b. 1960), meticulously rendered watercolors and prints of life-sized animals and birds in the style of John James Audubon and other eighteenth-and-nineteenth naturalists. My exegesis locates Ford's works in light of contemporary theories including issues of appropriation, historicism, postmodernism, colonialism and postcolonialism, and the anthropomorphizing of animals in both historic and contemporary art. I argue that Ford's works are "unnatural illustrations," exposing the limitations of the dominant Western naturalist traditions through his subversive and anti-imperialist visual strategies.

**"Little or No Influence": The Importance
of Costuming***Amanda Braun '12, Theatre Studies and
Political Science*
ADVISOR: *Nora Hussey, Theatre Studies*

"Clothes make the man. Naked people have little or no influence on society." -Mark Twain
Costuming is an important aspect of the theatrical experience. Whether doublets or dresses, a single costume choice can transform an individual. There will be a discussion of the choices involved in clothing actors for performance while looking through the lens of Shakespeare's great tragic romance, *Romeo & Juliet*. Historical context, as well as a modern viewpoint, informs how we may dress the same character in many different fashions.

**Sarah Wyman Whitman & the Art
of the Commercial Book in Boston***Molly Eckel '12, Art History*
ADVISOR: *Martha McNamara, Art*

Painter, book designer, and stained glass artist, Sarah Wyman Whitman (1842–1904) has largely been ignored in art historical scholarship despite her "Renaissance Woman" approach to artistic production, her devotion to the democratization of design, and prominence in Boston's nineteenth-century social circles. Whitman acted as a pioneer by carving out a niche for women artists who chose to avoid the male-dominated, hierarchal sphere of fine arts.

Instead, she turned to producing cloth-stamped book covers and works in stained glass and is credited as the first person to procure full-time employment as a book designer. My paper will use Whitman's life and work to explore how her social networks of artists, authors, and reformers shaped her work across media and illuminate issues facing women artists in the context of the fine press revival in Boston, the gender politics of craft, and notions of feminine sensibility.

Merce Cunningham: Accidental Icon*Jennifer Harris '12, Art History*
ADVISORS: *Martin Brody, Music, Patricia
Berman, Art*

In the summer of 1953, one could hardly call Merce Cunningham's group of dancers "a company" in the formal sense of the term. At the time it was only one of many protean artistic experiments taking shape at Black Mountain College, a hotbed of intellectual activity where artists' ideas circulated freely across the disciplines of music, dance, and the visual arts. Black Mountain fostered a collaborative setting for some of the most important creative minds of the second half of the twentieth century, yet during that summer their place in the American artistic pantheon was far from guaranteed. My thesis explores Cunningham's unlikely trajectory in becoming a cultural icon through an analysis of his aesthetic, networks, and funding. The project attempts to address the question of how this marginal experiment came to represent twentieth century American dance. (Research supported by Jerome A. Schiff Fellowship.)

**The Call to Prayer: Religious
Spirit Around the World**
(short talks) Science Center 104**Changing the Landscape of Global
Christianity: The Twentieth Century
Explosion of Christianity in Korea***Jaimie Crumley '12, International Relations-
History and Religion*
ADVISOR: *T. James Kadera, Religion*

South Korea has become a powerhouse of Christianity in the twentieth and twenty-first centuries, which is a surprising phenomenon considering Protestant Christianity was only introduced to Korea beginning in 1884. Therefore, my research explores reasons why Christianity took hold in Korea while it was firmly rejected in other parts of East Asia. Additionally, it explores the way Koreans have used their folk traditions to make Christianity their own. In so doing, Koreans

departed from the strict doctrine they were taught by the pioneer missionaries to Korea and instead practice a "Koreanized" form of Christianity. In addition, my research analyzes how today's Korean missionaries are changing global Christianity in their attempts to share Christianity with the world. In sharing impressing their spirituality onto others, Korean missionaries not only create converts but they also alter the demographics of Heaven, a change the pioneer missionaries to Korea would never have anticipated.

**Development of Kaji Kito in Nichiren
Shu Buddhism***Kyomi Igarashi '12, Biological Chemistry
and Religion*
ADVISOR: *T. James Kadera, Religion*

While the historical and religious roots of kaji kito ("ritual prayer") lay in Tibetan tantric and Chinese Buddhist practices, the most direct influence of kaji kito in Nichiren Shu Buddhism, a Japanese Buddhist sect founded by the Buddhist monk, Nichiren (1222–1282), comes from Shingon and Tendai Buddhism, two Japanese Buddhist traditions that precede Nichiren's time. The ritualistic aspect of the term "kaji" suggests divine bestowal, which can also be explained in the context of Shinto, an indigenous practice of worshipping kami (spiritual deities). However, the hidden nature of this practice evokes mysticism, often leading to its incorrect interpretations. The presentation will not only look at the historical development, but also the meaning of kaji kito both during and after Nichiren's time, including the physical practice of kaji kito called aragyo, a 100-day ascetic practice undergone annually in Japan by some Nichiren Shu priests. (Research supported by the Religion Department.)

**Soldiers for Christ: The Practice and
Theology of Dominionism in America***Sarah Miller '12, Political Science and Religion*
ADVISOR: *Stephen Marini, Religion*

An emergent strand of American Evangelicalism called Dominionism seeks to take control over American society in order to catalyze the second coming of Christ. Through the use of divinely appointed prophets and apostles, Dominionism has reimagined the structure of the Church and gained a significant following in both the US and abroad. Prophecy and social action are not novel concepts within American Evangelicalism, as previous moral initiatives

like Prohibition show. Yet dominionists seem to have recalibrated these Evangelical practices in order to express their radical worldview. The focus has shifted from moral to total spiritual reform. Practicing a method called spiritual warfare, dominionists liken themselves to soldiers, engaged in religious combat on a mission proclaimed to them by God. This project explores the eschatological theology, bellicose rhetoric, and furtive practices of Dominionism and asks if and when Christian spiritual warfare will shift from a theological to a violent socio-political movement.

Protestant & Confucian Ethics and the Spirit of Capitalism in Wenzhou, China

Grace Tien '12, Political Science

ADVISOR: *William Joseph, Political Science*

Wenzhou's experience of development has become a nationally acclaimed development model, following successful growth in what was once an impoverished village. The Wenzhou model is known for its emphasis on small businesses, commodity industries, and the unique relationship between the local government and private entrepreneurs.

This thesis focuses on a lesser-known aspect of Wenzhou, the impact of Protestant and Confucian culture on a new wave of entrepreneurs, known as "boss Christians" in China. Based on in-depth interviews with Christian CEOs and government officials, this thesis suggests evidence for the positive impact of religious values on business ethics and relations with the government. (Research supported by the Barnette Miller Fund.)

Femininity, Love, Scar, Farcical Realism: Four Faces of Chinese Literary Modernity

(panel discussion) Science Center 396

Ariel Chao '14, Chinese Language and Literature, Helen Yinan Ge '12, International Relations-Political Science, Natalie Griffin '14, Economics, Michelle Vogelzang '13, Individual-Peace and Justice Studies

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

Scar Literature: Transcending the Past

Ariel Chao '14, Chinese Language and Literature

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

The Cultural Revolution (1966–1976) launched by Mao Zedong pushed China into

a decade of national calamity. Families were torn apart, intellectuals were persecuted, children turned on their parents, and many were publicly humiliated at struggle sessions. In the literary movement that followed the years after the Cultural Revolution, known as "Scar Literature," writers such as Ba Jin and Yu Hua wrote about the hardships and atrocities that the Chinese people endured. They sought to restore the basic principles of humanity and morality back into Chinese culture and society, and questioned how one man was able to influence thousands to inflict pain, violence, and death on others (including their beloved ones). Throughout this presentation, I will explore literature's role before and after the Cultural Revolution and how the "Scar Literature" helped China to a slow spiritual recovery.

Love and Intimacy in Modern Chinese Literature

Helen Yinan Ge '12, International Relations-Political Science,

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

Love and intimacy is an exceptional topic that invites varied responses and representations in Chinese literature. The traditional style of romance was in decline when the storming New Culture Movement that spread the ideas of westernized romanticism reformed Chinese literature and individualism as the means of resisting the feudalistic patriarchy that supported the structure of arranged marriage. But over the entire course of the twentieth century, the representation of love and intimacy went through a metamorphosis that showed the mingling of literature and politics, or the merging of the public life and private life. Love and intimacy could be revolutionized, repressed, or sanctioned. Through this paper, I would like to explore the topic through the discussion of four phases in the development of modern Chinese literature: 1) before the revolution, 2) the new culture movement, 3) the era of the Communist revolution, and 4) the post-Mao epoch. I have selected four authors to represent each of the literary eras I have addressed above: Wu Jianren, Ding Ling, Eileen Chang, and Chu Tienwen. Ultimately, I hope to deepen our understanding of how the idea of romantic love in literature has been affected by political and cultural changes in China.

The Evolving Status of Feminism in Chinese Literature

Natalie Griffin '14, Economics

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

This paper looks into the dynamic relationship between womanhood and Chinese literary modernity. The way Chinese literature represents women has changed significantly during the twentieth century. Wu Jianren's *The Sea of Regret* was one of the first Chinese novels to feature a female protagonist. Later, other leading male writers like Lu Xun and Shen Congwen promoted women's liberation in their writings. However, although women had been trying to achieve equality by writing since before the twentieth century, it was only in the middle of the century that female writers like Ding Ling and Eileen Chang became as respected as male writers. Eventually, Chinese feminism transitioned into appreciating each woman's individuality, femininity, and sexuality, as shown in the works of contemporary women writers such as Xi Xi and Zhu Tienwen. Through analyzing these works, I will explore the intricate interactions between the transforming literary modernity and the evolving status of feminism in modern China.

The Construction of Farcical Realism

Michelle Vogelzang '13, Biology and Peace and Justice Studies

ADVISOR: *Professor Mingwei Song, East Asian Languages and Literatures*

Lu Xun, who is usually considered the father of modern Chinese literature, captured the Chinese reality through a combination of allegorical discourse and truth-claiming representation. Although Lu Xun's literary style became dominant in the making of China's literary modernity, it was adapted by his successors who sought to expand the structure of Chinese realist fiction. For example, in the 1930's, Lao She, as a follower of Lu Xun, nevertheless broke away from the realism model laid out by Lu Xun to form a new farcical realist literary style. In my presentation, Lao She's farcical realism and use of melodrama will be thoroughly examined through analyzing his novels *The Two Mas*, *Cat Country*, and *Camel Xiangzi*. Furthermore, brief comparisons will be made between the techniques and themes of Lao She's farcical realist writings and Lu Xun's allegorical realism as found in his major works "Diary of a Madman", "The Real Story of Ah-Q", and "A New Year's Sacrifice". This

analysis aims to demonstrate how Lao She broke away from the orthodox realism that developed around Lu Xun's writings.

Queering Sounds and Movements: Exploring Queer-Identified Musicians and Queer Social Movements

(short performance) Pendleton Hall West 116

S.J. Gray '12, Peace and Justice Studies
ADVISOR: *Lawrence Rosenwald, English*

How is today's queer community using music as a tool of social activism? How have queer musicians affected the history of the U.S.? My thesis focuses specifically on the relationship between queer music(ians) and the U.S. queer liberation movement, contextualizing the contemporary queer music scene within a history of queer social activism. To investigate this relationship, I conducted interviews with queer-identified musicians, probing conceptions of queer identity, social movements, and the role of music within activism. What does queerness mean to you? How do you engage with music? This interactive performance will incorporate dialogue, music, and audience participation. Science and Technology.

The World of Yoshinao Nakada: Introducing "The Schubert of Japan"

(long performance) Pendleton Hall West 220 Music Salon

Eriko Houlette, Senior Davis Scholar, Psychology, Tiffany Chan '15, Spanish, and Michiko Inouye '14, Music
ADVISOR: *Andrea Matthews, Music*

Yoshinao Nakada (1923 – 2000), considered by many to be "The Schubert of Japan", is a prolific Japanese composer who wrote nearly 3,000 vocal, choral and piano pieces in diverse genres. Nakada's songs are loved and continue to be sung by many Japanese, both young and old. Nakada, who was a pianist with small hands, also made unique and significant contributions to piano pedagogy. One such major contribution was his work advocating for a small-sized piano for children to prevent them stiffening their wrists and arms and using unnecessary force in their fingers. Through this performance, accompanied by a short talk, we will introduce the wonderful world of Nakada through several art songs as well as through piano pieces from his books *Piano Pieces for Little Hands* and *Children's Dreams*.

We Have Had Singing: A Historical Journey of the Specialty Repertoire the Female Vocal Ensemble

Featuring the Wellesley College Chamber Singers and Choral Scholars (long performance) Jewett Auditorium

Christine Chen '14, Music, Emma Rackstraw '14, International Relations-Economics, Katherine Siegel '14, Music, Kendrick Smaellie '14, Psychology, and Emily Weddle '14, Music
ADVISOR: *Lisa Graham, Music*

From the mystic chant of medieval convents through the seventeenth century girls' choruses of Venetian orphanages, so begins the long chronicle of beautiful, captivating, and intriguing music specifically crafted for the female vocal ensemble. While many of the most recognizable choral masterworks have been written for mixed chorus, there exists a creative wellspring of repertoire for women's chorus, so much of which is little known or underperformed. With the Choral Scholars as our guides and the Chamber Singers our ensemble, we will highlight some of the great works for women's chorus, illuminate the stylistic variety of the compositions, and discuss the joys and challenges of writing and performing music for female vocal ensembles. Featuring music by Hildegard von Bingen, Niccolò Porpora, Francesca Caccini, Robert Schumann, Giuseppe Verdi, and a premiere by composer Steven Sametz.

Members of the Chamber Singers: *Leigh Barton '14, Kalyani Bhatt '14, Su Lin Blodgett '15, Maurya Dickey '15, Lia Gallitano '15, Elizabeth Grab '14, Sarah Larson '12, Lucie Lozinski '14, Joanna Poget '14, Christine Chen '14, Amy Hu '14, Kellen Kartub '14, Amy Kim '12, Marranda Major '13, Liza White '15, Ruxin Xu '15*

Science & Technology

Growing Up as an Insect (short talks) Founders Hall 120

From Metamorphosis to Puberty: The Role of Ventral Veins Lacking (VVL) in Juvenile Hormone Regulation

CeCe Cheng '12, Biological Sciences
ADVISOR: *Yuichiro Suzuki, Biological Sciences*

Metamorphosis is a drastic change in form between juvenile and adult life stages that occurs in many organisms. Although this change in form is often thought of as a process

that occurs primarily in insects, humans also undergo a less drastic transition during puberty. The hormonal basis of metamorphosis and puberty are very similar in that both are initiated and regulated by neurohormones of the brain. In vertebrates, POU domain transcription factors (TF) have been linked to neuroendocrine changes associated with puberty. In order to better understand the processes of metamorphosis and puberty, we are investigating the function of a homolog of the POU domain TF, ventral veins lacking (vvl), found in the holometabolous insect, *Tribolium castaneum*. The link between vvl and key insect hormones, including the steroid hormone ecdysone and juvenile hormone, will be discussed. (Research supported by NSF.)

To Molt or Not to Molt: The Tale of A Hungry Caterpillar

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

In order to grow, insects must replace their old skin with a bigger one in a process called molting. Although it is known that the increased secretion of the steroid hormone ecdysone triggers molting, the factors responsible for this hormonal change remain poorly understood. To determine what nutritional cues initiate molting, fourth instar *Manduca sexta* larvae were fed modified diets. Amino acids were found to be necessary for molting. Additionally, when larvae were fed rapamycin, an inhibitor of an amino acid sensitive pathway, the timing of the molt was affected. Studies on the molecular changes associated with the disruption of this pathway are underway. (Research supported by the National Science Foundation and the Brachman Hoffman Fund.)

These Genes do an Insect Good: Investigating the Mechanisms of Regeneration in the Flour Beetle, *Tribolium castaneum*

Kyung Hwa Lee '12, Biological Sciences
ADVISOR: *Yuichiro Suzuki, Biological Sciences*

Why can't humans grow back arms, like insects? What genes are involved in regeneration in beetle appendages, and are their functions conserved through the animal kingdom? Understanding regeneration, a widespread phenomenon among the Metazoa, has profound implications in fields, such as regenerative medicine and evolutionary biology. To investigate the mechanisms underlying leg

and antennae regeneration, I have been using RNA interference to determine the roles of a few candidate transcription factors during larval appendage regeneration in the flour beetle, *Tribolium castaneum*. In addition, I have been investigating what gene transcripts are uniquely regulated during regeneration, using a genome-wide assay, RNA-seq. Thus, from this research, I hope to contribute to our current understanding of what genes are involved in insect appendage regeneration.

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

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

Phenotypic plasticity, the ability of a genotype to produce contrasting phenotypes in different environments, is prevalent, but its regulation remains poorly understood. Temperature and gene expression were manipulated to understand how phenotypic plasticity was regulated in the abdominal melanic pigmentation of milkweed bug, *Oncopeltus fasciatus*. A higher temperature induced lighter abdominal melanic pigmentation and a lower temperature induced darker pigmentation in abdomens of milkweed bugs. The knock-down of *Abdominal-B* caused extra melanic pigmentation in a segment that normally lacked pigmentation and the knock-down of *abdominal-A* resulted in almost pigment-less abdomen. The knock-down of *Tyrosine Hydroxylase* resulted in complete loss of pigmentation from the body. We hypothesize that *Abd-B* is a repressor and *abd-A* a promoter of melanic pigmentation. Moreover, *TH* must be required for the development of melanic pigmentation in general. Currently, we are analyzing the genetic interactions between these genes and the environment, and the adaptive significance of plasticity.

Nanotechnology: Small Matters (panel discussion) Science Center 278

Olivia Hendricks '12, Chemistry, Lisa Jacob '12, Chemistry, Young-Ah Lee '14, Chemistry, and Allison Yee '12, Chemistry and Chinese Language and Literature
ADVISOR: *Nolan Flynn, Chemistry*

Because of their size, nanomaterials exhibit many novel properties that make them potentially useful for applications in medicine, materials science, electronics, and alternative energy. Our lab is currently using nanomaterials for several of these applications. We are creating chemically functionalized nanoparticles for both

diagnosis and treatment of pancreatic cancer. We are also developing an electrochemically-triggered assembly method of nanoparticles for applications in sensing and information storage. Finally, we are studying the stability of nanoparticle thin films on various substrates, which have utility in biological or chemical sensing. (Research supported by the Beck Fellowship, the Brachman Hoffman Fellowship, the Henry Dreyfus Teacher Scholar Award, Howard Hughes Medical Institute, NSF-REU, the Schiff Fellowship, the Sophomore Early Research Program, and Wellesley College.)

Waste Reduction: Ensuring Wellesley's Pursuit of Sustainability Doesn't End Up in the Trash (panel discussion) Pendleton Hall East 239

Vanessa Barrera '12, Environmental Studies, Randelle Boots '13, Environmental Studies, Genea Foster '12, Environmental Studies, Melissa Gallant '12, Environmental Studies, Isabella Gambill '12, Environmental Studies, Phoebe Handler '12, Environmental Studies, Dominique Hazzard '12, Environmental Studies, Linda Hsu '13, Environmental Studies, Shilpa Idnani '12, Environmental Studies, Morgan McKinney '12, Political Science, Natalia Ospina '12, Environmental Studies, Pin Pravalprukskul '12, Environmental Studies, Amanda Smith '13, Environmental Studies, Whitney Smith '12, Environmental Studies, Kelli Stephens '12, Spanish and Environmental Studies, Vivienne Tateyuskanskan '12, Environmental Studies, Jessica Vandenberg '12, Environmental Studies and Geosciences, Julie Vining '12, Environmental Studies, Florence Wangui Kamonji '13, Urban Studies and Environmental Studies, Carolyn Whitlock '12, Environmental Studies, Ellen Willis-Norton '12, Environmental Studies and Biological Sciences, and Janna Zimmermann '13, Environmental Studies

ADVISOR: *Beth DeSombre, Environmental Studies*

The rise of planned obsolescence and disposable products has exponentially increased waste production in the United States. From 1960 to 2007 alone, the U.S. nearly tripled its annual municipal solid waste, generating a whopping 4.6 pounds of waste per person per day. With only a 34% recycling rate, most “waste” finds its way to a crowded landfill or contributes to atmospheric pollution through incineration. Come learn where Wellesley College fits in the American waste puzzle as ES300 presents its findings on Wellesley's waste and disposal prac-

tices. Join the discussion as we recommend what our community can do to rethink and reduce waste. Together, we can begin looking at the contents of our trash cans not as garbage, but as resources in the wrong place.

Hacking for the Community: How to Build a System in One Day? (panel discussion) Pendleton Hall East 339

Caroline Gallagher '14, Computer Science, Nora McKinnell '14, Computer Science, Karen Su '14, Media Arts and Sciences, and Kristian Tran '13, Computer Science
ADVISOR: *Eniana Mustafanaj, Computer Science*

In Spring 2012, we participated in two hackathons, each stretching over a period of 12 hours, as part of the requirements in a course in which we were enrolled, CS349A The Intelligent Web. Hackathons are intensive programming experiences in which groups of software developers gather together to create technology that helps a community or organization. The most famous of such gatherings, Random Hacks of Kindness (www.rhok.org) has as its tagline the motto: Hack for Humanity, with the mission to build practical open technology to make the world a better place. We decided to apply this motto to the community of Wellesley College and create technology that will allow students to make better informed and more personalized choices about what courses to take, what events to attend, or in what organizations to enroll. In this panel, we will share our hackathon experience and demonstrate the result of our work. (*Hackathons were supported by funding of the Norma Wilentz Hess Fellowship to the advisor.*)

Baaing, Strumming, and Vibrating: The Journey of Three Little Mice (panel discussion) Pendleton Hall West 117

Michelle Ferreirae '13, Computer Science, Taili Feng '13, Computer Science, Casey Grote '14, Undeclared, Lara Helm '12, English, Computer Science, Margaret Ligon '13, Computer Science, Heidi Wang '12, Computer Science, and Wendy Xu '13, Media Arts and Sciences
ADVISOR: *Orit Shaer, Computer Science*

In this session, we discuss three projects built on the Microsoft TouchMouse and presented at a conference as part of the Tangible User Interfaces class. From a white block with a plastic ball in its belly, to a sleek, contoured laser-shooting device, the evolution of the computer mouse has encompassed many excit-

ing turns and challenges. Now, with added touch capabilities, the TouchMouse engaged the creativity and expertise of ten Wellesley CS and MAS students. Applying novel interaction styles, these students used Tangible User Interface principles to transform this everyday device into a cuddly sheep that sparks children's creativity, a guitar that inspires your inner rock star, and a next-generation communication device that transcends the boundaries of space and distance. Come discover the perils and dangers they faced in their adventures and the knowledge and glories they gained in the international User Interface Software and Technology Student Innovation Contest.

Social Sciences

Women: Beauty, Power, Work & Politics

(short talks) Pendleton Hall West 212

Evaluating Female Engagement Team Effectiveness in Afghanistan

Anna Coll '12, International Relations-Political Science

ADVISOR: *Stacie Goddard, Political Science*

Population-centric counterinsurgency theory, advanced by the U.S. military's 2006 Field Manual 3–24, dictates that U.S. forces must engage local populations to effectively combat insurgencies. Since 2009, the United States has increasingly employed Female Engagement Teams (FETs) in Afghanistan to gain access to the female population. Proponents of the program argue that winning over women is essential for building local confidence and gaining access to information, and in turn suppressing the insurgency. While the FET program is frequently upheld as a proven concept, I argue that this conclusion has been reached simply because the program corresponds with the doctrinal model promoted by FM 3–24. The contribution of the FET program to quelling the insurgency in Afghanistan has not been critically examined, a reflection of the military's reluctance to test its own assumptions about the utility of population-centric COIN in the country. (Research supported by a Jerome A. Schiff Fellowship.)

Can We Do It?: Maternity Leaves and Women's Labor Market Outcomes

Meaghan Maher '12, Economics

ADVISOR: *Sari Kerr, Wellesley Centers for Women*

Women are much more likely than men to interrupt their work careers for family reasons, a pattern which contributes to both the commonly-referenced "gender wage gap" between men and women, as well as the "family wage gap" between women with and without children. Although most developed countries have instituted government mandated maternity leaves meant to protect women in the workplace and at home, the United States has yet to pass legislation that mandates maternity leaves for all women. Using the variation provided by state-level policies as well as the federal Family and Medical Leave Act passed in 1993, this research focuses on the effect of parental leave on labor market outcomes resulting from mandated maternity leaves in order to determine if they indeed protect women's positions on the career-ladder or cause them to miss out on crucial labor market opportunities. (Research supported by the WCW 35th Anniversary Fund and the Morse Fellowship.)

Bustles, Ruffles, and Bloomers: Belle Epoque Fashion and New Social Roles for French Women, 1880–1914

Claire McRee '12, History

ADVISORS: *Frances Malino, Jewish Studies and Venita Datta, French*

Few people know that the iconic *garçonne*, or flapper, style of the 1920s emerged during the years 1908–1914: in this era, women began shedding their cumbersome skirts and corsets in favor of flexible foundations and a youthful, slim silhouette. Because World War I is usually considered the catalyst for *garçonne* fashions, however, the crucial transitional period of the Belle Epoque is frequently overlooked. During the Belle Epoque, attitudes towards the female body became more positive as pleasure during sexual intimacy became more acceptable and as seductive lingerie came into fashion. Exercise for women also became popular, challenging the ideal of the delicate female body; sportswear did not disguise and constrict the female body to the same degree as everyday fashions. Both of these cultural developments reinforced changing attitudes towards women's bodies, leading to 1910s fashions that idealized a natural, modern female body shape.

Personality, Sexual Attitudes, and Unrestricted Sociosexual Behavior in College Women

Marussia Role '12, Psychology

ADVISOR: *Jonathan Cheek, Psychology*

My research explores the relations among personality, sexual attitudes, and women's sexual behavior. In particular, I focused on women with "unrestricted" sociosexual orientation, who are more inclined to engage in casual sex. To better understand the characteristics of women in this population, 110 Wellesley College seniors reported their attitudes about casual sex, completed personality measures, and reported their past and expected number of sexual partners. The specific issues explored were: 1) which personality traits are correlated with a high/low number of sexual partners, 2) which women with unrestricted sexual attitudes have had and/or realistically expect to have a high number of partners, 3) how goal orientation influences sexual behavior. The correlations found between personality, sexual attitudes, and sexual behavior will be discussed.

Pondering the Self and Society (short talks) Pendleton Hall East 139

Philosophy of Disability: A Reconsideration of the Strawsonian View of Reactive Attitudes in an Employment Scheme

Hannah Allen '12, Philosophy

ADVISOR: *Alison McIntyre, Philosophy*

The philosopher PF Strawson revolutionized the philosophical conversation about responsibility by introducing the idea that being a responsible agent involves being a suitable object of "reactive attitudes" like blame, forgiveness, resentment, and gratitude. He also defended the claim that we respond to evidence of impaired ability by suspending these reactive attitudes and adopting instead the "objective attitude," which consists of treating the "abnormal" person as someone to be managed. After a close look at the classic Strawsonian piece, I seek to demonstrate through real world scenarios involving Asperger's syndrome and PTSD that (1) we are much more forgiving (both theoretically and actually) than Strawson supposes and are capable of modifying (rather than suspending) reactive attitudes when we encounter impaired abilities, and also that (2) we should accommodate people with these disabilities by rethinking our expectations about the role of reciprocity in shaping reactive attitudes.

Captivating Albertine: Desire, Recognition, and the Problem of Intersubjectivity in Proust's *À La Recherche du Temps Perdu*

Olivia Brown '12, Philosophy

ADVISOR: *Nicolas de Warren, Philosophy*

How can we meaningfully know another person? In Marcel Proust's novel *À La Recherche du Temps Perdu*, the narrator Marcel acutely desires to understand Albertine—an elusive, enigmatic, and almost certainly bisexual jeune fille. Albertine's identity resists fixity because her expressions (gestures, actions, speech) lend themselves to mutually incompatible interpretations; consequently, Marcel is challenged to assemble a narrative that will render her expressions intelligible while cohering with their true significance. There are two methods by which Marcel can develop knowledge of Albertine's essential identity: he must (1) compel her to reciprocate his desire, or (2) paradoxically release her from scrutiny to become a stranger. I investigate the outcomes of these methods to determine whether either of them can potentially succeed. Captivating Albertine, together as a focus of Marcel's painstaking curiosity and project to secure her recognition, will illuminate the problem of intersubjective knowledge.

Effects of a Pretend Play Intervention on Executive Functioning Tasks: Self-Transformation Using a Cape with Special Powers

Karina Chung '13, Geosciences and Psychology, and Aryanne de Silva '13, Psychology

ADVISOR: *Tracy Gleason, Psychology*

How self-transformation through a pretend play intervention affects executive functioning performance was examined in 32 preschoolers (Mage = 51.10 months, range 3–5 years). Children were divided into two groups, and given a cape to wear. For the self-transformation group, the cape was described as having special, game-playing powers. For the control group, the cape was described as just part of the game. The hypothesis was partially supported; children in the self-transformation group outperformed those in the control group on one inhibitory control task ($p = .000$, $\eta^2 = .50$), and was non-significant, but in the expected direction, for the other two tasks. Additionally, self-transformation had greater effects on response inhibition than on attention shifting tasks ($p = .003$, $\eta^2 = .32$). Results suggest that self-transformation through pretend play can be an effective strategy for overcoming cognitive challenges, and for self-regulation skills such as impulse control.

Humanities

Hollywood East (film screening) Jewett Art Center 450

Alison Brace '12, Economics and Media Arts and Sciences

ADVISORS: *David Olsen, Art, and Salem Mekuria, Art*

This is a story about the film industry in Massachusetts and the far-reaching effects it has on the state and its identity. Since I came to Wellesley, 42 independent and Hollywood films have filmed in Massachusetts, including two movies nominated for Best Picture in the 2011 Academy Awards. Not only do the productions benefit the Massachusetts economy directly, but they also contribute to the state through identity and tourism. This film weaves through the politics, elements, and expanding effects of the activity in Massachusetts. It is a story of perseverance and identity, struggles and successes, and hopes for the future.

Dear Daughter, My Hopes for You (film screening) Jewett Art Center 450

Jda Gayle '13, Media Arts and Sciences

ADVISOR: *David Kelley, Art*

As often as looks and character traits, mothers bequeath expectations for their daughter's identities; lessons beginning at home. But what if the daughter leaves home before her lessons are completed? When a Jamaican girl sets off to New England as a teenager, her new classroom continuously challenges all she has been taught. Through the framework of personalized birthday cards, this short film explores the tensions that arise as the pair contends with the difficulties that distance and culture have placed on their relationship. As the daughter strives to create an individual identity while honoring her maternal heritage, these tensions threaten to rupture the mother's hopes, the very foundation of their relationship.

Time Zones (literary reading) Pendleton Hall East 239

Hallie Santo '12, English and Creative Writing

ADVISOR: *Daniel Chiasson, English*

"Time Zones" is a collection of original poems by Hallie Santo. The collection, which will be presented in three parts, will consist of about twenty free-verse poems, one of which is a longer poem cycle. The poems deal with problems arising from the passage of time - among them death, aging, estrangements, and

uneasy reunions - while others meditate on the paradoxes associated with time in the abstract. Several of the poems are autobiographical, in keeping with the tradition of confessional poetry espoused by the likes of Allen Ginsberg, Sylvia Plath, and Robert Lowell.

Storytelling through Song: Three Ways of Writing a Musical on the Life of a Medieval Queen

(long performance) Jewett Auditorium

May-Elise Martinsen '12, Music

ADVISOR: *Jenny Johnson, Music*

Medieval queen Margrete I rarely appears in the history books, in spite of the fact that she ruled Scandinavia in her own right at a time when women rarely had a role in government. In writing a musical adaptation of her life, I strive to give Margrete a voice as she struggles with homesickness, starvation, and plague, and eventually triumphs as she is elected "husband and wife" of Norway and Denmark. In this creative thesis, which explores the process of crafting a musical story, I focus on a critical moment of Margrete's development told three different ways: an objective narrative scene, a movie clip, and a choral piece. As we watch and listen to the three scenes play out, I will examine how different aspects of storytelling, media, and music can connect this extraordinary medieval woman with modern audiences.

Science and Technology

Getting Hot, Being Eaten, & Getting There: Stories of Species (short talks) Pendleton Hall West 117

Spatial Patterning of Herbivory

Julia Adams '14, Biological Sciences

ADVISOR: *Nicholas Rodenhouse, Biological Sciences*

Food abundance limits the reproductive success of Neotropical migrant songbirds breeding in northern hardwood forests, Hubbard Brook Experimental Forest, New Hampshire. Caterpillars are their primary food source, and it is difficult to count caterpillars directly. Consequently, herbivory may be a means of indexing caterpillar abundance. We predicted that more caterpillars would be found where it is warmer (e.g., low elevation, in forest tree-fall gaps) or where foliar nitrogen is greatest (i.e., high elevation, in forest tree-fall gaps).

We found that herbivory differed between low and high elevation plots and between tree species but not between forest gap and interior areas. (Research supported by the Wellesley College Janina A. Longtine Fund for Summer Research in the Natural Sciences.)

Behavioral and Physiological Changes in Honey Bee (*Apis mellifera*) Queens during a Swarming Event

Victoria Ellis '12, Biological Sciences

ADVISOR: Heather Mattila, Biological Sciences

Within a large and growing honey bee colony, overpopulation results in the initiation of a reproductive process known as swarming, which divides one colony into two smaller colonies. When a colony swarms, roughly two-thirds of its population departs with the original queen to found a new nest. Workers are aware of the queen's presence in the airborne swarm via the pheromones that she emits and our previous work shows that a queen's pheromone production increases prior to liftoff. To determine how queens prepared for liftoff and how worker-produced signals facilitate this process, swarming was induced in colonies and queens were monitored through the process for pheromone production and changes in body temperature and activity level. These queen metrics were related to simultaneous activities of workers in the swarm. Our study provides insight into the mechanisms that prepare queens for liftoff and for keeping airborne swarms cohesive.

Studying the Biology of Wolbachia, the Male-hating Bacteria

Heidi Park '12, Biological Sciences

ADVISOR: Heather Mattila, Biological Sciences

The Wolbachia bacterium is a reproductive parasite of insects that promotes the survival of female offspring to the detriment of male offspring. Wolbachia is extraordinarily widespread (infecting 60–80% of insect species) and also of medical relevance for the potential it holds as an insect vector control agent and drug target for filarial nematodes. However, little is known about how the bacterium interacts with its hosts. In this study, we studied proteins putatively used by Wolbachia for host interaction through three different techniques: 1) expression in yeast, a model eukaryote, to identify the molecular mechanisms used by Wolbachia to manipulate its hosts, 2) elucidating the function of these proteins by using bioinformatics (comparing them to well-characterized proteins) and 3) identifying

their localization within the yeast cell. We identified 10 candidate Wolbachia effectors. We are currently working on determining their localization in the eukaryotic cell.

When and Where: Divergence times and Colonization Tracks of Darwin's Darkling Beetles in the Galápagos Archipelago

Julia Wucherpfennig '12, Biological Sciences

ADVISOR: Andrea Sequeira, Biological Sciences

Stomion is a genus of endemic flightless tenebrionid beetles first collected by Charles Darwin on his voyage to the Galápagos. Given that the islands are a dynamic conveyor belt of potential colonization platforms, we tried to establish a link between Stomion's evolutionary history and the geologic history of the islands that they inhabit. Using a multi-gene dataset, we elucidated a potential colonization pattern, explored the timing of the first colonization event, and considered the subsequent generation of diversity within the archipelago. In order to derive a more generalized pattern further explaining the mechanism of colonization and speciation in island archipelagos, we considered the age of diversification of Stomion and its colonization history in comparison to other species in the Galápagos Islands.

Escaping & Expanding, Plants & Fish (short talks) Pendleton Hall West 116

Comparing the Photoprotective Importance of Nonphotochemical Quenching across a Range of Plant Species

Mia Howard '12, Biological Sciences, and

Jennifer Yang '12, Biological Sciences

ADVISOR: Martina Koniger, Biological Sciences

While light is the driving force of photosynthesis, excess light can be harmful. As sessile organisms exposed to often drastically fluctuating light intensities, plants have evolved several mechanisms for maintaining the delicate balance between maximizing photosynthetic yield and minimizing photooxidative damage. The xanthophyll cycle allows plants to quickly transition from a state of high photochemical efficiency to one of cautious photoprotection upon changes in light conditions. The associated photoprotective state, known as nonphotochemical quenching (NPQ), prevents photodamage by innocuously dissipating excess absorbed light energy as heat. We compared the capacity

of a range of species to perform NPQ and quantified its photoprotective importance by comparing the abilities of leaves treated with dithiothreitol, a xanthophyll cycle inhibitor, and untreated leaves to recover from high light stress. Ultimately, we hope to better understand photoprotection in plants by comparing our results to data describing the importance of chloroplast movement, another prominent photoprotective strategy.

Tip Growth: Assessing the Functional Equivalence of COW1 in *A. thaliana* and *P. patens*

Jessica Lee '12, Biological Sciences

ADVISOR: T. Kaye Peterman, Biological Sciences

Tip growth, or polarized cell expansion, produces cellular morphologies characterized by an outgrowth extending from a main body. Tip growth processes involve membrane trafficking to a specific growing point during cellular morphogenesis, and the resulting structure frequently allows for specialized cellular function. The model bryophyte *Physcomitrella patens* is an optimal system for tip growth studies. A previously characterized COW1 mutation in *Arabidopsis thaliana* individuals manifests a phenotype consistent with a tip growth defect (Grierson et al. 1997). Three putative COW1 homologs were identified in the *P. patens* genome based on sequence similarity, and a cross-species complementation study is underway to assess the functional similarities of these homologs to COW1. Identification of a functionally equivalent COW1 homolog in *P. patens* would suggest that its tip growth-specific function arose early in the evolution of land plants, and provide a conveniently simple model for investigating tip growth processes in the laboratory.

Catching Nemo: Fish Escape Strategies and Performance

Allison Robbins '13, Biological Science, and

Janet Jeong '14, Psychology

ADVISOR: David Ellerby, Biological Sciences

Successful predator evasion is essential for the survival of many animals. Performance, and therefore escape success and evolutionary fitness, is strongly influenced by both morphological and behavioral factors. Bluegill sunfish (*Lepomis macrochirus*) found in Lake Waban exhibit morphological differences based upon habitat. Shallow water fish have deeper body shapes, a morphology associated with increased escape performance. We therefore hypoth-

esized that these fish would exhibit greater fast start performance than the more streamlined deep water form. Behavioral strategies also influence escape success. For example, random, unpredictable escape directions may confuse predators, but limit specialization to maximize performance. Escape performance was analyzed from high-speed video recordings. Contrary to our predictions, deep water fish had significantly higher peak velocities and accelerations. Escape directions were also non-random. Each fish showed two or more preferred directions, but with enough variation to preserve unpredictability.

Determining the Importance of Two Photoprotective Mechanisms in *Arabidopsis thaliana* When Exposed to High Light Stress Treatments

Katrina Soriano '12, Biological Sciences
ADVISOR: *Martina Koniger, Biological Sciences*

In order to study the relative importance of chloroplast movement and the xanthophyll cycle as photoprotective mechanisms utilized by *Arabidopsis thaliana* we determined the photochemical efficiency of photosystem II before and after 90 min of high light exposure. We performed these treatments on WT and mutants that show partially reduced photoprotective abilities (npq1, phot2, phot1/phot2). In addition, we used inhibitors to selectively disable one or the other photoprotective mechanisms. As an actin-depolymerizer, cytochalasin B inhibits chloroplast movement and resulted in reduced high light stress tolerance.

A. thaliana WT exhibited the greatest difference in recovery when comparing the control and cytB treated leaves, while *A. thaliana* phot1/phot2 leaves showed the smallest difference. We will discuss the relative importance of these two mechanisms.

Drinking from the Fire Hose: Dealing with Large Datasets (short talks) Pendleton Hall West 212

Video Summarization: How to Understand Hours of Video in Seconds

Caroline Gallagher '14, Computer Science
ADVISORS: *Richard Souvenir, UNC Charlotte Computer Science, and Sobie Lee, Computer Science*

A large amount of video is being collected for environmental monitoring, biological analysis, and even "virtual visits" around the world using the global network of publicly-available webcams. It is impossible to watch all of this

footage; however, with summarization techniques, it may be possible to quickly understand important trends and events. I will discuss my work in computer vision that identifies objects and condenses video streams into shorter, still understandable videos. I will also discuss issues that arise while processing real-world video and how anomaly detection methods can be used to highlight the most interesting objects and events. This research was supported by the National Science Foundation REU Site grant (NSF-081745) at UNC Charlotte.

Launching Environmental Modeling into the 21st Century: GUI Based Multi-Variable Environmental Risk-Assessment

Shilpa Idnani '12, Environmental Studies, and Madeleine Adams '13, Undeclared
ADVISOR: *William Coleman, Chemistry*

Most modeling software systems for environmental analysis are unwieldy and difficult to use for the average consumer. They require individual training and have limited visualization capabilities. In this project, we are creating a visually appealing user-generated small-scale property model on which we apply environmental and climate change factors to estimate property damage and property weaknesses. Users will help generate a three dimensional diagram of an individual property or area and detail property characteristics such as GPS coordinates, land features, water levels and flora types. The program will generate precipitation, weather, and other geographic information for the period of time specified by the user. After assessing weaknesses, users will be able to manipulate their property to minimize damage and possible risk.

Investigating the Structural Determinants of Electrostatic Binding among Protein-protein Complexes: A Systematic, Large-scale Computational Study

Emma Nechamkin '12, Chemistry
ADVISOR: *Mala Radhakrishnan, Chemistry*

We seek to understand electrostatic determinants of protein binding. Electrostatics are both commonly manipulated in design and relevant to protein recognition. This project aims to map out electrostatic contributions to protein-protein binding as they relate to structural components of proteins. By systematically using a continuum electrostatics model on a large set of protein complexes, we quantify the electrostatic contributions of protein structural elements including distal

and local regions of proteins and backbone and side chain residue contributions. This study will also address whether protein specificity and promiscuity correlate to electrostatic component contribution and whether trends exist among proteins when correlated to monopole, fold, or size. By using many protein structures, statistically significant trends may be elucidated.

Social Media: Free Speech and Anonymity for Exposing the Narco Conflict in Mexico

Yesenia Trujillo '14, Computer Science
ADVISOR: *Eniana Mustafaraj, Computer Science*

Since 2006, the Mexican government has started to crack down on organized drug traffic. Military, police and the drug cartels are openly in war, which have cost more than 40,000 lives. They are all interested in keeping the violence off of newspapers and other news outlets. Traditional media has been intimidated into silence; sometimes with killings of journalists. Due to that, Mexican citizens have turned to social media and networks in order to remain informed and inform others about the safety of their communities. I have studied a large number of Twitter messages written by a community of users in Monterrey, Mexico. My findings suggest that users had to remain anonymous when providing information about risky situations but in the meantime, both the authorities and organized crime were trying to take advantage of this form of communication. The data suggests that the community changed its behavior due to external pressure.

Games, Visualizations, and Experiments - Three Ways to Understand Computer Security Better (panel discussion) Founders Hall 120

Jie Han '12, Computer Science, Economics, Marie Vasek '12, Computer Science, and Era Vuksani '12, Computer Science
ADVISOR: *Tyler Moore, Computer Science*

With the rising reliance on computers, computer security has emerged as a persistent and serious threat. This panel reviews three different approaches to improve the understanding of issues facing computer security. User education is key for improving Internet security, since users are frequently the target of attacks. But what is the best way to reach them? Playing video games is a popular form

of entertainment, but could it be used as an effective tool for teaching lessons in network security? Can researchers effectively condense large quantities of security data into user-friendly charts to improve understanding and help the users themselves uncover patterns? And, ultimately, who is responsible for keeping users safe on the internet? Does reporting websites which are actively delivering badware (e.g., viruses, trojans, and spyware) actually make a measurable difference? This panel explores research projects that help provide answers to each of these questions.

Social Sciences

No Way! ¡Si, Güey!: Arizona's S.B. 1070 and Other (Un)believably Racist Anti-Immigrant Legislation

(interactive teaching presentation)
Pendleton East 239

Briana Calleros '12, Political Science

ADVISOR: Laura Grattan, Political Science

Arizona's S.B. 1070 and copycat legislation in other states are stirring national debate about the Mexico-U.S. border and the borders of collective identity. Many claim that these laws, intended to rid the nation of "illegals," are not racist because "illegal is not a race." I argue that S.B.1070, and other legislation aimed at increasing surveillance of immigrants in schools, hospitals, and rental markets, conceive of the borders of collective identity in nationalist and racist terms while simultaneously intruding into routine aspects of everyday life. The rights of immigrants, Latino/a citizens, and all citizens are at risk without a historically accurate and politically charged discussion of race at the forefront of the debate. I draw on Gloria Anzaldúa's influential border theory to transform the discourse of race and national belonging in current immigration debates.

The Social Paradox In Contemporary Korea: Exploring Korean Youth Culture

(panel discussion) Science Center 104

Ji-Su Park '13, Sociology, Political Science, Grace Song '12, Political Science, East Asian Studies, and Sulamita Yang '13, English and Economics
ADVISOR: Sun-Hee Lee, East Asian Languages and Literatures

This panel explores a newly emerging, multi-faceted value system in the contemporary youth culture of South Korea. On the surface, most

Koreans continue to identify with and adhere to Neo-Confucian values, which have long dominated Korean society. However, as Korea is becoming increasingly globalized, recent cultural developments contradict such deep-rooted values. This social paradox is examined through diverse literature and a survey investigating how Korean and Korean-American youths identify themselves. Furthermore, focusing on gender and language use, we argue that sexual liberalization in Korean popular culture and the extensive use of expletives among youth highlight the discontinuity between the new and traditional Korean images.

Changing the World We Live In (short talks) Pendleton Hall East 139

Medieval Culture, Agriculture, and Climate: A Scientific History of Human-environment Relationships

Genevieve Goldleaf '12, Medieval/Renaissance Studies and Environmental Studies

ADVISOR: Alden Griffith, Environmental Studies

The "medieval warm period", c. 1000–1300, provides an example of the relationships between changes in climate and in human history, when confluences between natural climatic variations improved European agricultural conditions. Environmental data contextualize the resulting economic, political, and cultural changes characterizing later medieval Europe; conversely, historical data concerning human activities during the early medieval may contribute a more complete account of possible climate drivers. For example, early medieval deforestation and agricultural expansion may have contributed greenhouse gases such as methane and carbon dioxide to the atmosphere; changed the amount of light reflected by Earth's surface; or altered local hydrology, all drivers of climate trends. Tracing a more complex relationship between the natural and anthropogenic factors contributing to the medieval climate system from both historical and scientific perspectives invites us to explore the implications for contemporary narratives of climate change.

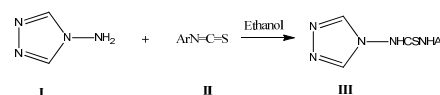
Organic Synthesis of Novel Sulfur-containing Antitubercular Agents

Kathryn Jackson '13, Economics and Chemistry, and Amelia Williams '13, History
ADVISOR: Michael Hearn, Chemistry

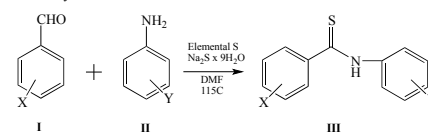
Even the most vigorous existing drugs are hardly effective in combination therapy for multi-drug-resistant tuberculosis and extensively drug-resistant tuberculosis.

Alarming, in December 2011, physicians in Hinduja, India, identified totally drug-resistant tuberculosis. Novel antimicrobials employing new mechanisms are thus urgently needed to combat resistance. The heterocyclic azole drug class is proving useful in this regard. We synthesized and examined the efficacy of a crystalline series of 1-aryl-3-(1,2,4-triazol-4-yl)-thioureas generated from 4-amino-1,2,4-triazole and isothiocyanates. A second line of investigation endeavors to improve synthesis methods and drug efficacy for substituted thioamides. Modifying the classical Willgerodt-Kindler reaction permits the convenient preparation of phenylbenzothioamides from substituted benzaldehydes and aromatic amines under mild conditions. With the good availability of the starting materials and the possibility of significant structural variation, these two series of compounds have proven valuable in our program of drug discovery. (This work is supported by Wellesley College.)

1-Aryl-3-(4H-1,2,4-triazol-4-yl)thioureas (Ar = aryl group)



N-Phenylbenzothioamides



From the Village to the City: The Building of India's Post-independence Utopias

Ikuno Naka '12, International Relations- History
ADVISOR: Nikhil Rao, History

Since independence in 1947, India has seen the building of new postcolonial cities and villages throughout the country. Underscoring these projects was a new 20th-century understanding of the built environment as being inextricably connected to a nation's society, economy and politics. The redevelopment of India's villages and cities was part of a larger utopian project of changing India's condition of underdevelopment; a means of broadcasting that Nehruvian assumption of nationhood across the country. There were two projects in particular that were pioneers of their time. The first is the redevelopment of the rural agricultural villages of Etawah, Uttar Pradesh. The second is the new postcolonial capital city of northern India,

Chandigarh. Both projects were a means to move forward from the India's past, so often associated with its “backwardness”, and to reassert itself as a modern nation-state to its citizens and the world.

Strategies of Urban Renewal in Modern Spain

Judee Utoh '12, Architecture and Spanish
ADVISOR: *Carlos Ramos, Spanish*

Modern Spanish cities have used different strategies to confront the combined challenges presented by rapid changes in urbanization, demographics and lifestyles since the death of Franco and the arrival of democracy (1975). This presentation will explore urban policies employed in Córdoba and Barcelona in the post-Franco period to foster community and to solve space and quality of life problems in high-density areas. Particular attention will be devoted to the role of public investment in urban regeneration projects. By size and location these two cities can be used as case studies to better understand different options for urban renewal. Barcelona is a large cosmopolitan city in the North of Spain and Córdoba is a medium-sized city in the South. (Research supported by Office of the Provost and Dean of the College.)

Stirring the Melting Pot: Understanding American Culture (short talks) Pendleton Hall East 339

Cross-cultural Exchanges between France and America in the Letters of the Artist Anne Whitney

Lia Dawley '12, Economics and Art History
ADVISOR: *Jacqueline Musacchio, Art*

Like many nineteenth-century American women artists, the sculptor Anne Whitney traveled to Europe to study. Her largely unpublished letters spanning her entire life, including her time abroad, are held in the College Archives. These letters, along with photographs and ephemera, provide insight into her personality, her relationship with the painter Adeline Manning, and her involvement in social and political activism. My spring independent study involves annotating and transcribing these letters, specifically those from her stay in Paris and Ecouen. I am examining Whitney's cross-cultural exchanges, creating lists of the people and places she encountered, and analyzing the information via visits to nearby museums and

libraries. My work will become part of an interactive online scholarly resource developed in collaboration with Professor Musacchio, Archives, and LTS, which will serve as the basis for a Fall 2012 art history seminar.

Long, Tall Texan: Whiteness, Gender, and Pop Culture Representations of Texas Rangers

Kerry Knerr '12, American Studies
ADVISOR: *Ryan Quintana, History*

Imagine sagebrush. Imagine more sky than you've ever seen. Imagine a solitary man on horseback, perched on a lonely ridge, with his shining silver-star badge. Perhaps less typical of a bygone era of American history, this image fits more comfortably in the canon of popular culture and of Westerns. The classic imagery of the West endures as a powerful set of tropes in American culture. Moreover, they serve as a touchstone for the creation of idealized racialized or gendered figures. Continually revisited and revised for generations, westerns serve as a site of popular historical imagination, provide a stage for the depiction of contemporary social struggles, and comprise an evolving cultural arena ripe for analysis. Blending popular culture and historical analysis, I examine the social forces that created idealized white masculinity, especially through the Texas Rangers, and contextualize the role of westerns in the construction and contestation of privilege.

Counterculture without a Cause: Hipsters and Commodified Subcultures

Karin Robinson '12, Sociology
ADVISOR: *Markella Rutherford, Sociology*

The late 20th and early 21st centuries have witnessed the rise of a cultural circle, dubbed “Hipster culture”. Markedly different from subcultures of the past, a large portion of Hipster culture is devoted to the conspicuous consumption of goods. Over the course of a semester, this study examined the various sociological causes contributing to the trajectory of commodification of this pseudo-rebellious cultural circle. My study aimed to identify the unique collective properties of Hipsters as a cultural group, and to identify instances of suppression via cultural diffusion. Conclusions were based on extensive theoretical research and several interviews with Wellesley College Students.

Asians in America: Compiling History on the Web

Samantha Wu '12, Computer Science
ADVISORS: *Karen Shih, Office of Intercultural Education, and Joy Renjilian-Burgy, Spanish*

After becoming frustrated with the lack of information about Asian Americans in my formal education, I struggled to think of a way to ease the research path of others who wanted to learn about the history of Asian Americans and the struggles they have faced. When presented with the opportunity to create a final project for my Education seminar, I jumped at the opportunity to create a website--one that would give a brief glimpse of the history of Asians in America and lay the foundations for discussions on issues that Asian Americans face today.

And Justice for All: From the Obese to the Elderly Culture (short talks) Science Center 278

Ageing Justice for Elderly Korean American Women: A Feminist Bioethics Framework

Gena Hong '12, Women's and Gender Studies
ADVISOR: *Charlene Galarneau, Women's and Gender Studies*

While feminist bioethicists have built consensus around the need to analyze intersecting identities along the lines of race, class, and gender, the role of age has been relatively untheorized. The lack of age consideration reflects oppression in the form of marginalization, which challenges elderly women's right to be heard. Adapting the framework of reproductive justice, I develop a notion of aging justice specific to elderly Korean American women. To understand what is necessary for aging justice, I refine feminist theory on aging by valuing the lived experiences of Korean American women and their articulations of aging with dignity and respect. Listening to the voices of those with the most intimate knowledge of their oppression enriches theory by allowing for a more culturally and contextually appropriate vision of aging justice. (Research supported by a Jerome A. Schiff Fellowship.)

The Representation of Women in Television, On- and Off-Screen

Kathleen Leonard '12, Cinema and Media Studies
 ADVISOR: *Winifred Wood, Writing Program*

A smaller wage gap and a standard workday have made television a comparatively woman-friendly industry in the world of mass media. Women have had great success of late creating and producing sitcoms for major networks, and in doing so have founded a new generation of Maudes, Murphy Browns, and Mary Tyler Moores. Yet with women representing a third of all characters and a quarter of all writers, producers, directors, editors, and creators, women continue to be underserved both on and off-screen. This presentation will address the shifting roles of women working for and appearing in television, as well as the influence of reality shows, the thousands of channels you never watch, and that pesky myth that women aren't funny.

Radical Possibilities: Independent Media Production and Contemporary Reproductive Justice Activism

Anna Weick '12, American Studies
 ADVISOR: *Susan Reverby, Women's and Gender Studies*

With the relentless political attacks on women's health in the past year, abortion-rights activists are looking to alternative strategies of mobilizing support. How can non-mainstream modes of reproductive justice organizing expand our ideas of art-making, protest, and resistance? Situated within specific historical and political legacies of independent feminist media-making, these activists work with diverse tools, mediums, and technologies to create their art. Alongside their projects, these activists strive to create reproductive justice communities of hope and strength, with a focus on community-oriented, grassroots, and localized protest methods.

Building and Breaking an Institution (short talks) Science Center 396

Pedagogies of Microfinance: Contextualizing and Understanding the Impact of Financial Education Programs in Latin America and in India

Ana Plascencia Casillas '14, Economics and Political Science
 ADVISOR: *Smitha Radhakrishnan, Sociology*

Worldwide the microfinance sector has opened the path between the underserved populations

in developing countries and the global financial system. By providing the underserved populations access to basic financial services, microenterprises have sought to liberate the poor from the entrapping cycle of poverty and equip them with the financial resources to work their way up the economic ladder. Yet the question remains: Are basic financial services enough? At ACCION International, a non-profit microfinance organization, entrepreneurship and financial education have become a key non-financial component of poverty alleviation and empowerment. Our understanding of the development and impact of Accion's educational programs will be presented. (Research supported by the Early Sophomore Research Program.)

The Effect of Inheritance Rules on Marriage and Dowries in India

Elizabeth Gilmartin '12, Economics
 ADVISOR: *Kristin Butcher, Economics*

The Hindu Succession Act, 1956, redefined the right for Hindu women and some others to inherit in India, mostly potentially impacting the inheritance of land which was the most valuable asset of most families. Some have asserted that dowries are an alternative way for females who are excluded from inheritance to receive some family wealth. If this is the case, one would expect that the change in the inheritance law to include women and girls to some extent could result in changes in the practice of providing dowries for Hindu women. Using some recently released data this paper will examine whether a change is quantifiable.

The Special Court for Sierra Leone: A Critical Analysis of Efforts to Address Impunity

Charlotte Hulme '14, Political Science
 ADVISOR: *Stacie Goddard, Political Science*

The Special Court for Sierra Leone (SCSL) was established by the UN and the government of Sierra Leone to prosecute the "persons [bearing] the greatest responsibility for serious violations of international humanitarian law and Sierra Leonean law" during the state's eleven-year civil war (1991–2002). The court also aimed to leave a legacy of addressing impunity and restoring respect for the rule of law.

In summer 2011, I travelled to Sierra Leone and interviewed 120 war victims, gauging their knowledge and perceptions of the SCSL and, particularly, its limited indictment

mandate that included only 13 high-level war criminals. My interviewees' responses suggest that, despite extensive outreach efforts, the court has failed to become relevant for many Sierra Leoneans. This project offers an analysis of how future special courts may improve their mandates in order to become more effective post-conflict justice mechanisms and to better serve war victims.

Follow the Money: Catholic Giving after the Boston Clergy Abuse Crisis

Rachel Salmanowitz '12, Religion
 ADVISOR: *Stephen Marini, Religion*

In January 2002, The Boston Globe published several articles disclosing the Archdiocese of Boston's complicity in the sexual abuse of over 130 children by Father John Geoghan. Over the next few months, the situation worsened as hundreds of people contacted lawyers, prosecutors and the Globe claiming to have been abused as children by priests. In the wake of this scandal, tens of thousands of Catholics withheld their contributions to the archdiocese, and donations to parish collections dropped perceptibly. The financial losses the Catholic Church in Boston incurred during the clergy sexual abuse crisis are attributable to more than displeasure with the archdiocese's handling of sexually abusive priests. Instead, pre-existing issues within the Archdiocese of Boston and the larger Catholic Church in the United States significantly contributed to Catholic giving patterns following the crisis.

Humanities

The Kids Are Alright (short talks) Jewett Art Center 450

Look, That's Me!: Children in Contemporary American Photography

Stephanie Anklin '12, Economics and Art History

ADVISOR: *Rebecca Bedell, Art*

Three photographers, Helen Levitt, Sally Mann, and Wendy Ewald, have taken the contentious history of children in art and created images that confront and compliment the tropes of the past and present. Helen Levitt's detached recordings of the romantic child in gritty urban tableaux serve as a connection between the idealized child of the Victorian past and the modernist potential of street photography. Sally Mann's ethereal and controversial portraits of her children portray the post-modern conception of children as multifaceted beings and push us to question the ethical boundaries of representation. Wendy Ewald transforms the documentation process by allowing the children to photograph; using those images she creates narratives about their communities, combining the photographer's and subject's voice in a novel way. These three photographers exemplify the diversity and the progression of methodology and representation in the depiction of children in photography.

Pathway Consumption on a Budget

Evelyn Haro '13, Sociology

ADVISOR: *Markella Rutherford, Sociology*

Pierre Bourdieu's concept of cultural capital, first introduced in 1973, argues that class distinctions are cultivated through social conditioning and has since been revered as a cemented social truth by the academic community. This truth has often been taken to mean that working-class children are intrinsically destined to be culturally short-changed because of lacking economic resources. Through qualitative interviews, I study a group of working-class parents who have created networks of like-minded parents who have a socially-progressive agenda based on academic success for their children, despite having limited economic resources. My analysis examines the ways that some working-class families actively encourage upward mobility through the careful cultivation of cultural capital on a budget. This example leads us to re-examine the complicated relationship between economic and cultural forms of capital.

The Making of a Classic: Louisa May Alcott, her Novels, and Modern Media

Hayley Lenahan '12, English

ADVISOR: *Lawrence Rosenwald, English*

This thesis project explores what appeals to old and new readers of Louisa May Alcott's works and the role that her novels have played in American society in the past 150 years. Though they were written for children, her novels liberally discuss complicated social and political issues: the roles of women, poverty, race, immigration, and education. Moreover, Alcott and her works have remained alive in their astonishingly diverse modern and contemporary adaptations from the Oscar-nominated film starring Christian Bale and Winona Ryder to annually redesigned Madame Alexander dolls to the recently published *Little Women and Werewolves*.

"Stories about Himself": Forgetfulness, Stories, and Power in Peter Pan

Abigail Murdy '12, English and Philosophy

ADVISOR: *Susan Meyer, English*

At the age of two, Wendy learns she must grow up. "You always know after you are two," the narrator claims. "Two is the beginning of the end." Adulthood comes with beginnings and endings — stories. Peter Pan represents an alternative to this pattern, an alternative imbued with frolic, mirth, and adventure — but also with tension, danger, and fright. When Peter Pan invades the Darling home, he takes Wendy, John, and Michael to Neverland, and their adult future grows uncertain. Peter, so vibrant and alive, is also associated with death. The novel has a darker side, one the Disney version fails to capture. In this talk, I will explore the relationship between narrative and power in J.M. Barrie's classic — stories play an important role, ultimately leaving Peter powerless over the Darling children.

Ether Wind (exhibition) Jewett Art Gallery

Katlyn Bloomfield, '12, Art Studio and Media Arts and Sciences

ADVISORS: *Phyllis McGibbon, Art, and David Olsen, Art*

Ether Wind is envisioned as a video game stripped down to its mechanics in the form of card typologies of beasts, weapons, characters, and skills. I seek to utilize the visual conventions of tarot cards, playing cards, Pokemon cards; and video game guides, indexes, and

bestiaries to uncover how basic tools such as cards and dice have historically inspired the human imagination to create thousands of different games.

Space, Place, and Home: How Does Space Become Place and Place Become Home? (exhibition) Jewett Art Gallery

Zsofia Schweger '12, Comparative Literature and Art Studio

ADVISOR: *Phyllis McGibbon, Art*

In my year-long studio thesis investigation, I explore how space becomes place and place becomes home through the visual study of interiors. My paintings and videos seek pauses and moments of comfort in the ever-changing Pendleton West 321 studio as well as in dynamic Wellesley College public spaces, such as the Science Center. I define space as purely functional, place as familiar, and home as intimate, as put forth by scholar Yi-Fu Tuan; I am interested in the complex notion of home and what it means for the artist. (Project supported by the Pamela Daniels Fellowship.)

Taking Up Space: Interactions Between Body & Environment (exhibition) Jewett Art Gallery

Artemis Jenkins '12, Architecture and French

ADVISOR: *Andrew Mowbray, Art*

In this gallery presentation, a collection of work will be shown that questions the relationship between viewer and three dimensional object. Each work in the presentation will strive to engage the attendees not only as viewers but as actors. In walking under, through, and around built environments participants will engage with what it means to take up space. Additionally, many works in the collection speak to the manner in which built environments dictate bodily movements and mental state. Produced from a variety of materials using diverse construction techniques, the pieces presented differ wildly but demand a similar spatial and mental engagement between body and environment.

Round Robin: A Print Exchange (exhibition) Jewett Art Gallery

Marisol Ardon '13, Media Arts and Sciences, Katlyn Bloomfield '12, Media Arts and Sciences, Kimberly Chang '12, Media Arts and Sciences, Beatrice Denham '14, Architecture, Serena Eastman '12, Studio Art, Danielle Ezor '13, Studio Art, Nicole Gebriel '12, Media Arts and Sciences, Emily Lin '14, Undeclared, Elena Mironciuc '13, Studio Art, Yoojin Park '13, Media Arts and Sciences, Rebecca Spilecki '14, Art Studio, and Kara Templeton '12 Philosophy
ADVISORS: Katherine Ruffin, Book Arts, and Phyllis McGibbon, Art

The Advanced Print Concepts course brings students together from various graphic and print backgrounds, which range from digital imaging to woodcuts, and from bookmaking to intaglio. Students explored the intersection of multimedia as a reinterpretation of the long-standing print exchange tradition. In addition to honing their artistic vision through individual projects, students collaborated by integrating images from the vernacular print culture, and responding to and building on the creative concepts found in the works of other students. The process of making prints encourages students to work collaboratively to solve visual and technical challenges, and the result is a series of prints with shared authorship and ownership. The exhibition presents the progression of proofs into a set of twelve finished prints.

A Horizontal Search: Squaring Away American Mystery (exhibition) Jewett Art Gallery

Lucy Cleland '13, English
ADVISORS: Katherine Ruffin, Book Arts, and Phyllis McGibbon, Art

When thinking about larger events on the historical plane, people often ask, "where were you when...?" In my independent study, I have begun to explore how people locate themselves within an environment and how that sense of a place within the larger space of the world allows a certain identity to develop. I want to explore these three questions: have we lost something locating ourselves? Or do we locate ourselves to prevent feeling lost or disoriented? What does it mean to be someone somewhere? Through printmaking techniques involving lithography, intaglio, and relief methods, I explore how, by combining matrices and techniques, I can construct a layered but specific answer to these questions. I play with fragments of the

grid and let scraps from a culturally shared memory, pieces of personal history, and larger swaths of place and time coexist to visually investigate who and where we are.

"And All the Men and Women Merely Players": A Year of Theatre at Wellesley College (long performance) Ruth Nagel Jones Theatre in Alumnae Hall

Members of the Wellesley College Theatre Community, Directors, and Performers
ADVISOR: Nora Hussey, Theatre Studies

In what has become a Ruhlman tradition, The Theatres Studies Department, Upstage and Shakespeare Society come together to present selected scenes from each of the theatre productions of the 2011/2012 season. Theatre at Wellesley brings the liberal arts approach to the performing arts. It includes bringing new interpretations of Shakespeare and presenting cutting edge plays from American and British playwrights. With stories that are at once thought provoking and memorable, students and professionals work side by side to explore new and old traditions of the theatre. Through active student and faculty collaboration, the theatre at Wellesley seeks to explore all aspects of the human condition through the power of the stage.

Musical Performance (long performance) Jewett Auditorium

Janet Jeong '14, Psychology, Claudina Yang '14, Undeclared, Michiko Inouye '14, Music, Audrey Wozniak '14, Music, Lily Kim '15, Undeclared, Graeme Durovich '15, Undeclared, and Eleanor Brown '15, Undeclared
ADVISOR: David Russell, Music

Piano Trio in C minor, Op. 1 no. 3: Ludwig van Beethoven

Janet Jeong '14, violin
Claudina Yang '14, cello
Michiko Inouye '14, piano
(coached by Jenny Tang)

String Quartet in G minor,
Op. 27: Edvard Grieg
Audrey Wozniak '14, violin
Lily Kim '15, violin
Graeme Durovich '15, viola
Eleanor Brown '15, cello
(coached by David Russell)

In this first performance by the members of Wellesley's Chamber Music Society, we will

present Beethoven's exciting early Piano Trio in C minor, Op. 1, no.3 performed by Janet Jeong '14, violin, Claudina Yang '14, cello and Michiko Inouye '14, piano followed by Edvard Grieg's passionate String Quartet in G minor, Op. 27 performed by Audrey Wozniak '14 and Lily Kim '15, violins, Graeme Durovich '15, viola and Eleanor Brown '15, cello. These Ruhlman performances are the culmination of year-long projects by these talented and dedicated students.

Science and Technology

POSTER SESSIONS

Science Center Focus

The Effect of Steroid Hormones on Enzymes in Prostate Cancer Cells

Rutendo Gambe '13, Neuroscience, and Melissa D'Andrea '14, Biological Chemistry
ADVISOR: Adele Wolfson, Chemistry

Steroid hormones including testosterone and estradiol are known to be growth factors involved in the proliferation of prostate cancer cells. Other growth factors include the peptides neurotensin and gonadotropin releasing hormone (GnRH). Prolyl-endopeptidase (PEP), an endopeptidase, which is found in prostate cancer cells, is able to break down substrates such as neurotensin and GnRH. In order to determine the effect of testosterone and estradiol on the level of PEP in prostate cancer cells, androgen-sensitive prostate cancer cells were treated with steroids for varying time periods. Our results indicate that the level of PEP in the cells is affected by the presence of androgens. There is a marked decrease in the level of PEP present in the cell after the cells have been exposed to dihydrotestosterone for one hour, suggesting that the effects of androgens are most felt with a limited exposure of the cells to androgens.

Hormone Effects on the Enzyme Thimet Oligopeptidase in Prostate Cancer Cells

Christa DeFries '13, Biological Chemistry
ADVISOR: Adele Wolfson, Chemistry

The enzyme thimet oligopeptidase (TOP) is present throughout the body and acts on many substrates, including neuropeptides that affect production of hormones such as estrogens and androgens. In order to study TOP in systems of hormone regulation, we have treated prostate cancer cells with three different hormones: dihydrotestosterone, estradiol, and

gonadotropin-releasing hormone (GnRH). The effects of these treatments on changes in TOP levels and location in the cells may help demonstrate what TOP's role is in such systems. To date, we have found an increase in TOP in the prostate cells after incubation with both dihydrotestosterone and estradiol, and little effect with GnRH treatment. Estradiol treatment also appears to increase nuclear TOP. (Research supported by the Roberta Day Staley and Karl A. Staley Fund for Cancer-Related Research.)

The Colonial New England Kitchen Garden: Historical Urban Agriculture

Julia Di Cicco '12, Geosciences

ADVISOR: *Daniel Brabander, Geosciences*

The kitchen garden was a mainstay of the Colonial American household. These gardens provided a range of goods from produce to essential household and medical supplies. In a study of an 18th century kitchen garden at the Rebecca Nurse Homestead in Danvers, MA, we integrate archival research and previous archaeological studies with geochemically fingerprinted soil cores to obtain a glimpse at early American gardening practices. One of the aims of this research is to determine if soils in relatively undisturbed colonial homesteads might be a repository that contains evidence of past land use and amendment patterns.

Synthesis of Novel Ethyleneglycol-thiolated Electroactive Molecules for Surface Modification of Gold Nanoparticles

Olivia Hulme '12, Chemistry, Kellen Kartub '14, Chemistry, and Ji Shin '13, Neuroscience
ADVISORS: *Dora Carrico-Moniz, Chemistry and Nolan Flynn, Chemistry*

This project, in collaboration with the Flynn group, involves the development of gold nanoparticles (AuNPs) to be used for electrochemical assembly. Unlike assembly using biological molecules, electrochemically-driven assembly of AuNPs is not limited by conditions such as temperature, pH, solvent, and ionic strength. The aim of this project is to create gold nanoparticles bearing hydroquinone terminal functional groups, which will be able to form an oxime linkage with nanoparticle-bound aminoxy groups, following oxidation. Here, we present research efforts toward the synthesis of a novel ethyleneglycol-thiolated hydroquinone target molecule designed to improve the solubility of the nanoparticles in aqueous

solvents. This species will be used to coat the surface of AuNPs and will be linked to nanoparticle-bound aminoxy groups, thus providing a new triggering method to drive AuNP assembly.

It is All in the Genes: Genetic Signatures of Habitat Fragmentation in the Endemic Populations of Isabela Island, Galápagos

Adrienne Cheng '14, Biological Sciences, Kara Lu '14, Biological Sciences, and Blair Uhlig '14, Classical Civilization

ADVISOR: *Andrea Sequeira, Biological Sciences*

Habitat fragmentation can cause changes in the genetic patterns of natural populations. These include reduced genetic variation within populations, increased genetic differences between populations, and deviation from a typical isolation by distance pattern. In weevil populations endemic to Southern volcanoes in Northern Isabela, we have observed these alterations, indicating that habitat fragmentation could have affected those populations. Through the genotyping of fifteen microsatellite loci we seek to determine to what extent a change in habitat continuity could have affected populations from the more inaccessible volcanoes, Wolf and Ecuador, right at the northern tip of Isabela Island.

Progress toward the Total Synthesis of the Natural Product Angelmarin

Nicole Spiegelman '13, Chemistry

ADVISOR: *Dora Carrico-Moniz, Chemistry*

In 2011, the American Cancer Society estimated that close to 45,000 Americans would be diagnosed with pancreatic cancer. Currently, there is no clinically effective pancreatic cancer treatment. Angelmarin, a coumarin derivative, is a natural product isolated from the root of the Japanese medicinal plant *Angelica Pubescens* and has been shown to possess promising anti-cancer activity. Angelmarin was found to exhibit cytotoxicity of 0.01 $\mu\text{g}/\text{mL}$ against the pancreatic cancer cell line PANC-1 under nutrient starvation conditions within 24 hours. The progress towards the total synthesis of angelmarin will be presented.

Thimet Oligopeptidase is Carried by Cellular Microvesicles in the Cell Culture Supernatants of Prostate Cancer Cells

Yu Liu '13, Biological Chemistry

ADVISOR: *Adele Wolfson, Chemistry*

Peptidases are 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 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 advances highlight the biological relevance of microvesicles (MVs), plasma membrane bleb formations, which may carry away membrane-associated molecules (i.e. proteins) upon dissociation from the parental cell. We asked whether TOP is carried by cellular MVs and thus exist in association with MVs extracellularly, specifically for our androgen-sensitive prostate cancer cells. Cells were treated with the androgen dihydrotestosterone (DHT). Western blot analysis revealed that TOP protein is indeed carried by the isolated cellular MVs of both untreated and DHT-treated prostate cancer cells.

Biomimetic Modeling of the Active Site of Soluble Methane Monooxygenase (sMMO)

Chan Myae Myae Soe '12, Chemistry

ADVISORS: *Stephen Lippard, Chemistry (MIT), and Dora Carrico-Moniz, Chemistry*

Molecular oxygen plays essential roles in numerous biological transformations, ranging from oxygen transport to hydrocarbon hydroxylation. Since it is a potent oxidation catalyst, both environmentally friendly and economically viable, there have been extensive studies on the carboxylate-bridged diiron proteins, which are capable of activating dioxygen. One such enzymatic machinery is soluble methane monooxygenase system (sMMO). This enzyme catalyzes selective oxidation of methane to methanol by activating dioxygen at ambient conditions in the metabolic systems of methanotrophic bacteria. Our approach is small molecule synthetic modeling of the active site of the hydroxylate component of sMMO, where dioxygen activation is believed to occur. Biomimetic modeling of sMMOH

will not only shed insights into the structure and mechanistic functions of the proteins, but also provide economical and safer alternate energy sources. Studies toward the synthesis, characterization, and reactivity studies of carboxylate-bridged diiron(II) complexes from triptycene-based bis(benzimidazole) diester ligands will be presented.

Design, Synthesis and Evaluation of a Novel Series of Isoprenylated Coumarins as Promising Pancreatic Cancer Therapeutics

Maria Jun '14, Chemistry, Alyssa Bacay '14, Biological Chemistry, and Julia Solomon '13, Economics

ADVISORS: *Dora Carrico-Moniz, Chemistry, and Andrew Webb, Biological Sciences*

This research aims to conduct structure-activity relationship (SAR) studies of a novel series of isoprenylated coumarins against a variety of human pancreatic cancer cell lines—specifically, to determine the effect of isoprenyl chain length on the compound's cytotoxic activity. Several coumarin scaffolds with isoprenyl and alkyl chain tails of varying lengths were designed and synthesized. Each compound's cytotoxic activity against the PANC-1 cell line and other pancreatic adenocarcinoma cell lines under nutrient rich and deprived conditions will be presented. Information gained from SAR studies may contribute to the development of a novel pancreatic cancer therapy.

The Role of PATL1 and PATL2 in Plant Vascular Development

Elze Rackaityte '13, Biological Science, and Emily Cockey '15, Undeclared

ADVISOR: *T. Kaye Peterman, Biological Sciences*

The patellins (PATLs) are Arabidopsis thaliana Sec14-related proteins that are thought to function in membrane trafficking. Recent phylogenetic studies suggest that the PATL family arose during the evolution of the first vascular plants. Furthermore, high coexpression of PATL 1 and PATL 2 with RABG3B, a protein key to vascular development, suggests that PATL proteins may be associated with this process. In order to study the role of PATL 1 and PATL 2 in vascular development, we have created double “knock-out” mutants of Arabidopsis that lack PATL 1 and PATL 2. We are currently characterizing the cotyledon venation patterns of these mutants to determine if vascular development is altered. Additionally, we are establishing cell cultures of the mutants to determine if

PATL1 and PATL2 are required for differentiation of tracheary elements upon induction with H₃BO₃/brassinolide treatment.

Purification and Enzymatic Characterization of Chitinase: Comparison of Fruit Enzymes

Catherine Cheng '12, Biological Chemistry, Leah Clement '12, Biological Chemistry, Myriam Taibi '12, and Biological Chemistry
ADVISOR: *Elizabeth Oakes, Chemistry*

Chitin is a carbohydrate polymer made from N-acetylglucosamine that is found in the cell walls and shells of a wide variety of organisms including fungi, insects and crustaceans. Many plants produce an enzyme, chitinase, to break down chitin and therefore act as a natural fungicide or insecticide. Chitinase performs its activity by cutting the glycosidic linkages connecting the individual sugar moieties in the chitin, effectively dissolving the chitin structure. To characterize chitinase activity under a range of conditions and to assess differences between enzymes derived from different sources, we purified two types of plant chitinase. This study compares purification techniques and enzymatic activity as a function of solution conditions.

Cloning, Expression, and Purification of an Affinity-tagged RapA Protein

Amy Goodale '13, Biological Chemistry, Kyomi Igarashi '12, Biological Chemistry and Religion, and Emily Shortt '13, Biological Chemistry
ADVISOR: *Elizabeth Oakes, Chemistry*

RapA protein levels in Escherichia coli cells are correlated with cellular exposure to DNA damaging agents. This protein may be a key regulator of cellular adaptation to stresses that affect chromosome integrity, topology and conformation. To begin characterizing RapA, we have cloned the rapA gene from E. coli and introduced it into a plasmid encoding a protein fusion between RapA and an affinity tag. The plasmid was transformed into a protein expression strain of E. coli and levels of RapA production as a function of transcription induction conditions were examined by gel electrophoresis. Future studies with the purified protein will test the proposal that RapA has separate binding sites for double stranded DNA and for the single stranded RNA transcript that are vital for its regulation of cellular transcription under stress conditions.

Examination of the Amyloid Propensities of Model Proteins: A Study of Protein Folding Pathways and the Regulation of Amyloid Formation

Christa DeFries '13, Biological Chemistry, Serena Liu '13, Biological Chemistry, Hayley Malkin '13, Biological Chemistry, Shabeen Rangwalla '13, Anthropology and Chemistry, and Daniela Rios '12, Biological Chemistry
ADVISOR: *Elizabeth Oakes, Chemistry*

Amyloid protein aggregates are associated with a number of neurodegenerative diseases such as Alzheimer's and Parkinson's diseases. These protein structures form insoluble fibril plaques in brain tissue. They originate from an alternative mis-folded structure acquired by an otherwise normal (native) protein in the body. Several proteins are able to adopt amyloid structures and once they do, they have the ability to induce amyloid formation in other native forms of the protein. Most protein aggregates resulting from mis-folded protein do not have common structural characteristics. Amyloids, however, form a highly conserved repetitive secondary structure. We have used a number of techniques to examine the protein folding pathways of a model system capable of forming amyloid structures and have examined the effects of solution conditions on amyloid formation.

Eat & Run (and Don't Forget to Express Your Genes) (short talks)

Pendleton Hall West 1170

Influence of Diet on Lead Metabolism and Fate: Linking Dietary Deficits and Risk of Lead Poisoning

Phoebe Handler '12, Environmental Studies
ADVISOR: *Daniel Brabander, Geosciences*

Our food choices not only influence our overall health, they also play a role in determining our susceptibility to environmental toxins like lead. Exposure to even low levels of lead during childhood causes lasting cognitive and behavioral deficits. Lead poisoning prevention programs have long endorsed primary prevention by limiting access to lead, however the role of diet as a method of prevention has received less attention. The use of dietary management to minimize lead absorption in the body presents a viable, flexible, and affordable piece in the prevention puzzle that can augment existing public health programming. Certain dietary choices, such as increasing calcium and iron intake, can minimize absorption of

lead. This project seeks to define a “lead-safe diet” and formulate the most effective ways of communicating such dietary recommendations to populations most at risk.

You Are What You Eat (and Do): An Epigenetic Study on Diet, Exercise and Obesity Genes

Constance Ohlinger '12, Individual-Health and Society

ADVISOR: *Andrew Webb, Biological Sciences*

Epigenetics is an up and coming field that investigates heritable changes in gene expression that are a result of our environment and, in many cases, our culture and lifestyle. In an effort to look at the current obesity epidemic from multiple disciplines, this thesis encompassed both a biological and an anthropological study. The biological aim was to investigate the environmental factors that influence the pathogenesis and pathophysiology of obesity. The field of epigenetics is also changing many of the ways we think about inheritance, identity, our environment, disease and preventative healthcare. Taking obesity as an example, this presentation will also cover the intertwining of culture and health in the epigenetic era. (Research supported by the Office of the Provost and Dean of the College.)

Risk Factors Associated with Athletic Injuries in Division III Collegiate Athletes

Katrina Stearns '12, Psychology

ADVISORS: *Connie Bauman, Physical*

Education, Recreation and Athletics,

Corrine Taylor, Quantitative Reasoning

Over a period of three years, more than 100 Wellesley College athletes have been tested on strength, flexibility, and biomechanical measures. The purpose of this study is to determine if any relationships exist between select strength measures and lower extremity injuries. My focus is specifically on gluteus medius, gluteus maximus to hamstring ratios, and hamstring to quad ratios and their relationship with stabilization. Come find out how to minimize your potential for these types of injury!

ForeBrain Talks (short talks)

Pendleton Hall West 116

Rhythm and Spoken Word: How a Language's Natural Pulse may Aid in Perception and Memory

Dana Bullister '12, Computer Science and Cognitive and Linguistic Sciences

ADVISOR: *Margaret Keane, Psychology*

Speech rhythm is critical to understanding spoken word. In fact, it is one of the first features infants learn about their native language (Ramus, 2000). For my project I investigated the potential role of speech rhythm in second language acquisition. Nine native English speakers, each with an average of 3½ years of German language training, were presented with recordings of sentences in German. These sentences had either natural, German-specific speech rhythm or were spoken to a regular beat. Results showed that when participants repeated these German sentences they less often made consonant-intrusion errors when sentences were presented with their natural rhythm. This finding suggests that language learning may be facilitated by language-specific speech rhythm. (Research supported by the Swiss National Science Foundation.)

Modulation of Neuronal Spiking Activity in Frontal and Parietal Cortices during Auditory Detection

Katie Eyring '14, Neuroscience, and Kia Salehi '13, Neuroscience

ADVISOR: *Michael Wiest, Neuroscience*

How is a sensory stimulus translated into perception? Where does this translation occur? We began to answer these questions in rats by recording action potentials from neurons in the frontal and parietal cortices, both of which have been implicated in different aspects of sensory stimulus recognition in primates. Previous studies have produced conflicting results regarding the location of neurons associated with behavioral detection, as opposed to encoding of stimulus parameters. To address this issue, we analyzed the extent to which neurons in each cortex accurately reflected behavioral detection and presence of target stimuli while rats performed an auditory detection task, and whether the activity of these same neurons was modulated by sensory parameters of the target stimulus. Our preliminary results suggest that the sensory detection network in rat cortex may be less functionally segregated than in the primate brain. (Research supported by the Dean's Office via Wellesley SERP.)

Gamma Coherence as a Neural Correlate of Attention in Rats

Linnea Herzog '12, Neuroscience

ADVISOR: *Michael Wiest, Neuroscience*

Attention research has drawn a distinction between bottom-up attention, which is elicited by inherently salient stimuli (e.g. a siren or flashing light) and top-down attention, which is internally driven (e.g. looking for your keys). Oscillatory power and coherence in the gamma range (30–100 Hz), generated by the synchronized firing of many neurons, have been implicated in both bottom-up and top-down attentional processing. The purpose of my thesis is to determine if increased gamma power and coherence between the frontal and parietal cortex correlate with attention in rats. Local field potentials were recorded from these two cortical areas as rats listened to frequent and rare auditory stimuli (bottom-up attention) or performed a single-tone detection task (top-down attention). Our preliminary results support that increased frontal-parietal gamma coherence and power are associated with top-down attentional processing. (Research supported by the Jerome A. Schiff Fellowship and the Office of the Dean of the College.)

Emergence of Human Episodic Memory and Future Thinking

Michelle Lee '12, Psychology and Neuroscience

ADVISORS: *Margaret Keane, Psychology, and*

Tracy Gleason, Psychology

Though both emerge during the preschool years, the uniquely human capacities to recall personal events and generate possible future events have rarely been examined in tandem. The present study elicited narratives from 3-, 4-, and 5-year-old children to assess episodic memory and future thinking. Children experienced a novel classroom event and were asked the following day what they remembered about the event. In a separate session, children were asked to imagine a future event in which a friend would come over to their home. The richness of children's memory and imagined future episodes was compared. The hypotheses were 1) that their autobiographical memory and future thinking would undergo substantial development between the ages of 3 and 5 years, and 2) that performance on episodic memory and future thinking measures would be positively correlated, suggesting a common neurocognitive basis underlying episodic memory and future thinking.

What Happens When You Apply Computer Science to Biology?: Creating Systems for Improving the Scientific Process (panel discussion) Pendleton Hall East 339

Taili Feng '13, Computer Science, Michelle Ferreira '13, Computer Science, Casey Grote '14, Undeclared, Sirui Liu '13, Biological Sciences, Kelsey Tempel '13, Computer Science, Heidi Wang '12, Computer Science, and Wendy Xu '13, Media Arts and Sciences

ADVISOR: Orit Shaer, Computer Science

Currently, biological researchers wade through huge heterogeneous data sets in a tedious, mostly individual routine. Our research seeks to improve the scientific process by facilitating collaboration and improving productivity. G-nome Surfer Pro is a multi-touch tabletop application that streamlines work-flow, giving researchers a means of organizing genomic information from many sources. GreenTouch is a collaborative mobile and a tabletop environment for improving data collection, encouraging sharing and comparison of the collected data. We will discuss the design and development of these tools, and we will review our research findings. (Research supported by National Science Foundation and HHMI.)

It's Easy as A-B-C: Learning How to Invent Mobile Apps for the Android (panel discussion) Science Center 278

Maki Kato, Senior Davis Scholar, Psychology, Charlene Lee '14, History, Mariam Qazi '13, Political Science and Astronomy, Sonali Sastry '15, Undeclared, and Ruxin Xu '15, Undeclared
ADVISORS: Franklyn Turbak, Computer Science, Eniana Mustafaraj, Computer Science

In 2010, over 300,000 mobile applications were created and downloaded more than 10.9 billion times. With mobile apps, we can read the news, throw angry birds, and connect with hundreds of social media outlets. In CS 117: Inventing Mobile Apps, we spent 4 months developing our own mobile applications for the Android phone. From conceiving an idea to designing the user interface platform to marketing our apps, we learned the ins and outs of what it means to be a mobile app developer. Come hear the stories of 5 different students, as we discuss how we all started with no programming experience, learned the frustrations and joys of coding, and ended up becoming inventors of our own mobile apps.

Membrane Mayhem: Investigating Protein-Lipid Interactions (panel discussion) Science Center 104

Maria Bustillo '13, Biological Sciences, Amanda Daigle '12, Bioinformatics, Alexandra Fischer '13, Chemistry, Julia Klaips '14, Biological Chemistry, Elizabeth Lawler '12, Chemistry, Kathryn Pavia '12, Biological Chemistry, Penny Wang '14, Biological Chemistry, and Amy Zhou '14, Chemistry
ADVISOR: Donald Elmore, Chemistry

More than half of all known proteins associate in some way with the cell membrane. Because of the importance of such associations, the Elmore lab uses chemical, biochemical, and computational techniques to understand the membrane interactions of the plant protein patellin and of assorted antimicrobial peptides. Patellin is a plant protein with a high binding affinity for particular phospholipids and a marked preference for PI5P. Using computational techniques, we seek to understand the basis for this affinity and extrapolate this information to other similar proteins. Antimicrobial peptides are short polypeptide sequences with the ability to kill various types of bacteria and sometimes even cancerous cells. Through investigations of histone-derived antimicrobial peptides and their mechanisms of action, we seek to determine which amino acids or structural factors lead to strong antimicrobial activity or to specific mechanisms of antimicrobial action.

Social Sciences

All About the Incentives (short talks) Pendleton Hall East 239

The Volunteer's Dilemma: An Evolutionary Analysis

Divya Gopinath '12, Economics and Mathematics
ADVISOR: Casey Rothschild, Economics

The Volunteer's Dilemma is a social dilemma or public goods "game" in which players "volunteer" to contribute in order to produce a public good. Volunteering is costly, and only one volunteer is needed for all players to enjoy the full benefit of the public good. I use the tools of evolutionary game theory to explore the nature of equilibria that arise in this game. Do the players who consistently choose not to contribute tend to be evolutionarily strongest? Are volunteers typically be those who have the lowest cost of contribution? How does the size of the group effect these tendencies? The answers to these

questions help us characterize the game and make predictions about the characteristics and settings that are likely to be associated with volunteerism. I then use the predictions to motivate a laboratory experiment designed to study the empirical determinants of volunteerism.

How Does Mortgage Credit Affect Low-income Communities?

Tessa Johnson '12, Psychology and Economics
ADVISOR: Daniel Fetter, Economics

In the wake of the subprime boom and the foreclosure crisis, many have questioned the basis for federal policies that encourage mortgage lending in low-income communities. Some see these policies as an essential tool in encouraging the social and economic well-being of these communities; others believe they are ineffective at best. Over the past academic year, I have studied the impact of two of these policies: the Community Reinvestment Act (CRA) and the Government Sponsored Enterprise (GSE) Affordable Housing Goals. A growing body of research demonstrates that CRA and GSE goals have translated into meaningful increases in the supply of mortgage credit for neighborhoods on the margin of being classified as "underserved." But how does greater access to mortgage credit affect the health of these communities? I shed light on this question by looking at mobility, crime, employment, and educational attainment in the communities affected by the policies.

Fiscal Interventions and Their Effects on Voter Behavior: A Study of Programa de Asignación Familiar (PRAF) in Honduras

Nandita Krishnaswamy '12, Mathematics and Economics
ADVISOR: Patrick McEwan, Economics

Economists study voting behavior for numerous reasons, one of which is to assess how people respond to incentives. If an incumbent government implements a program to transfer money back to tax-payers, is there a greater likelihood of re-election? Does the effect persist in subsequent elections? I address some of these questions empirically by studying a conditional cash transfer program, the Programa de Asignación Familiar (PRAF), implemented by the Honduran government. The random assignment of the program to 40 of 70 eligible municipalities, together with municipal-level voting data from pre- and post-PRAF elections, allows us to estimate the causal effect of the

program on various political outcomes. This study will allow us to test how incumbents are rewarded for benefits given to citizens, and enhance our understanding of voter behavior. (Research supported by the Jerome A. Schiff Fellowship.)

The Effect of the Minimum Wage on the High School Dropout Rate

Anna Morris '12, Economics
 ADVISOR: *Phillip Levine, Economics*

The state of education in the U.S. is declining. While education spending has skyrocketed over the past three decades, the high school graduation rate has stagnated. Perhaps of more concern, the U.S. currently ranks 19th among developed countries in the rate of high school completion. What can explain the high school dropout crisis in America? Oft-explored correlations include the effects of compulsory schooling laws and standards-based testing, but one area that has received little attention is the effect the minimum wage could have on a teenager's decision to drop out of school to find work or stay in school to increase their human capital. My research uses data on 30 cohorts of high school students to perform a quasi-experiment examining the role played by the minimum wage in their schooling decisions.

Making Sense of the World (short talks) Pendleton Hall East 139

Four Faces of Extraversion and Perception of Expression: A Comparison of the Definitions of Extraversion and other Aspects of Self-Concept to Nonverbal Decoding

Julia Denardo Roney '12, Psychology
 ADVISOR: *Jonathan Cheek, Psychology*

Why are some excellent at judging a person's emotional state, while others find it more difficult? My thesis research, building off a study I conducted last year, seeks to answer this question. I examined how different aspects of self-concept, such as extraversion, empathy, and private self-consciousness relate to the perception of facial expressions. In addition, I looked at how social behaviors and attitudes, such as social group size preference, relate to how accurately a person perceives facial expressions. Come to my talk and learn which aspects of self-concept, social behaviors, and social attitudes predict good perception of others' facial expressions. (Research supported by a Dean's Grant and Psychology Department funds.)

Relationship between Stereo and Motion Cues in Depth Perception

Da In Kim '13, Neuroscience
 ADVISOR: *Ellen Hildreth, Computer Science*

People need to perceive depth to see three-dimensional structures, to gauge the distance between objects, and to engage in activities such as playing sports. Two of the most important cues for perceiving depth are stereo and motion. Previous research found a surprising negative correlation between peoples' ability to perceive depth order at object boundaries using stereo and their ability to perceive depth using motion cues. To examine the mechanisms underlying this behavioral difference, we sought to determine whether this negative correlation exists in earlier stages of visual processing. I designed perceptual experiments in which subjects judge the location of the border between two surfaces using stereo and motion cues. The results will further our understanding of the integration of stereo and motion cues in the human visual system and may lead to improvements in computer vision technology. (Funded by the Barbara Peterson Ruhlman '54 Fund for Interdisciplinary Studies)

Social-Emotional Development in Deaf Children Ages Four to Seven

Jennifer Lu '12, Psychology
 ADVISORS: *Jennie Pyers, Psychology, and Barbara Beatty, Education*

Due to advances in technology, deaf children are now eligible to receive cochlear implants at an earlier age. While there is extensive information on the positive effects of cochlear implantation on their oral language development, not much is known about their social-emotional development. To learn more about curricular approaches to fostering social-emotional development in deaf children with and without cochlear implants, I interviewed teachers and administrators to identify their successful classroom strategies for promoting social-emotional and language development and their challenges. I also documented the physical set-up of classrooms, classroom schedules, and how children use space during play. As a second component to this study, I am developing a questionnaire for parents to measure deaf children's quality of life. The findings of this study will be valuable for early interventionists, doctors, and parents of deaf children (Research supported by the Dean's Office and Pamela Daniels Fund.)

Does Iconicity Matter? Deaf and Hearing Children's Understanding of Iconic Signs

Rachel Magid '12, Psychology and French
 ADVISOR: *Jennie Pyers, Psychology*

Early in development, children learn countless symbols. Adults take advantage of one characteristic inherent to many symbols in the manual modality- iconicity. Iconicity, the relationship between a symbol's form and its meaning, is a natural part of sign languages. We tested hearing and deaf children learning ASL on their ability to recognize the iconic relationship between signs and their referents and investigated whether children learn iconic signs better than non-iconic ones. Exploring children's use of iconicity informs our understanding of symbolic development as well as how children acquiring a language with iconicity interpret iconic symbols. (Research supported by a Schiff Fellowship.)

Buying In: Exploring the Social Meanings of Commodities (panel discussion) Science Center 396

Takako Ehara '12, Economics, Una Graonic '13, Psychology, My-Co Huynh '12, Sociology, Chinese Language and Literature, Christine Joo '12, Economics, Camden Louie '12, American Studies and French Cultural Studies, Christina Moon '12, Sociology, Anne Myers '12, Sociology, Ji-Su Park '13, Sociology and Political Science, Karin Robinson '12, Sociology, and Zakiyyah Sutton '12, Sociology and Political Science
 ADVISOR: *Markella Rutherford, Sociology*

How do workout clothes become status symbols? Can cabbage signal a global identity? Why do so many Chinese businesswomen purchase Ferraris? Though we may often take them for granted, everyday objects such as food, clothes, toys, cosmetics, and automobiles have complex histories and social meanings. Students in Sociology 334, Seminar on Consumer Culture, investigated and analyzed an array of commodities, re-thinking their social significance and hidden contradictions. Their analyses critically engage questions of who consumes particular commodities, what social and cultural structures condition consumption, and how social meanings and identities are constructed through consumption. Their findings will be presented in an interactive poster session. Come learn about and re-think the hidden social meanings of kimchi, yoga pants, wedding gowns, hijab, romance novels, hair relaxers, breakfast cereal, Ferraris, anti-wrinkle creams, Barbie dolls and more!

1:30–2:40pm

All is Fair in Trade and War? A Tale of Three U.S. Trade Disputes (panel discussion)

Founders Hall 120

Hee Soo Chung '13, Psychology, Economics, Anna Coll '12, International Relations-Political Science, Mengyu Huang '12, East Asian Studies, Economics, Ran Ji '13, Mathematics, Economics, Elaine Kim '12, International Relations-Economics, and Lianna Lee '12, Economics
ADVISOR: *David Lindauer, Economics*

Firms in the United States have legal recourse both against subsidized imports and dumping, defined as a foreign producer's sale of its product in the U.S. at a price below its home market price or its cost of production. We consider three trade disputes in which U.S. firms filed petitions with the International Trade Commission and the Department of Commerce against foreign firms that were allegedly selling goods at unfair prices. While the determination process in each dispute to impose tariffs was legally sound, each investigation's outcome- the imposition of a tariff on a foreign good- was economically inefficient. This conundrum raises serious questions about the design of American anti-dumping law.

So, You Want to Invent a Language? (panel discussion)

Pendleton Hall West 212

Taylor Bass '13, Cognitive and Linguistic Sciences, Rachel Haberman '12, Cognitive and Linguistic Sciences, Crystal Luttrell '13, Cognitive and Linguistic Sciences, Alexandra Ostolaza '13, Cognitive and Linguistic Sciences, and Ariel Robinson '13, Cognitive and Linguistic Sciences
ADVISOR: *Angela Carpenter, Cognitive and Linguistic Sciences*

While invented languages have been around for centuries, they have become more visible in recent years through movies such as Avatar's Na'vi, video games, and other media. What does it take to invent a linguistically-sound language? Members of LING 315 tackled that challenge with exciting results. Come along with us as we discuss the process, the problems and the end-result of building a language from the ground up. Each of us has a completely different language with its accompanying culture. We will share with you how we created the culture and built the sounds, the words and the syntax of our languages. We hope you will be inspired by the possibilities!

3–4:10pm

Humanities

The Woman, the Warrior, and Love in Asia (short talks)
Science Center 396

India in Love: A Study of the Changing Nature of Love, Sex and Marriage in India

Viveka Bhandari '12, History
ADVISOR: *Neelima Shukla-Bhatt, South Asia Studies*

India in Love: A Study of the Changing Nature of Love, Sex and Marriage in India
Viveka Bhandari '12, History Advisor: Neelima Shukla-Bhatt, Religion In her upcoming book "India in Love", author Ira Trivedi explores the changing nature towards the concepts of love, sex and marriage in Indian society. It is very evident that in the 21st century, India is becoming increasingly liberal. However as one explores the history of the nation, it is noticed that during the Vedic age was defined by a rather liberal society. Can it then be said that India is not transitioning from a historically conservative society but is in fact due to globalization returning to the relatively liberal society it was? (Part of the Research being carried out for Ira Trivedi)

Combating Religious Communalism with Theatre: Mahesh Dattani's Final Solutions

Sobini Pillai '12, Theatre Studies and South Asian Studies
ADVISOR: *Neelima Shukla-Bhatt, South Asia Studies*

Religion has played a major role in the rich history of theatre in South Asia. South Asia's religious history is also tremendous, with the region boasting significant populations of the world's major religions. Unfortunately, over the centuries, conflict has arisen amongst these different religious communities. My thesis explores whether the medium of theatre can successfully promote ideas of religious pluralism in South Asia. This research focuses on Mahesh Dattani's play Final Solutions, which tells the story of two Muslims seeking refuge in the home of a Hindu family during a communal riot in Gujarat, India. I have analyzed the play's potential to promote religious harmony by examining its characters and themes, the political climate during which it was written, reactions to both the Hindi and English versions of the play, and the success other mediums like film have had with addressing religious communalism.

"Good Wife, Wise Mother": Women's Roles within Japanese Society

Carter Rice '13, East Asian Studies
ADVISOR: *Eve Zimmerman, East Asian Languages and Literatures*

Many believe that Japanese women are the most repressed women in the developed world. Women in Japanese society very rarely achieve the high ranks within companies that are accessible to salaried men. Rather, it is socially accepted that a woman's most important role is to bear children and to maintain the smallest unit of society-the household. Yet in spite of government efforts to encourage women to have children, the birth rate has been steadily decreasing. Japanese women are generally waiting longer to get married, some even forgoing marriage altogether. Where do women stand today? How are their societal roles changing?

Blood and Honor: Deconstructing the Warrior in East Asian Cinema

Jennifer Yoo '12, East Asian Studies
ADVISOR: *Eve Zimmerman, East Asian Languages and Literatures*

From Kurosawa Akira to Zhang Yimou, directors in East Asian cinema have been telling the story of the warrior for decades. Recent years have not only witnessed a resurgence of this film genre in China, Japan, as well as South Korea, but also a remaking of the very style that has typically been attributed to it, which results in noticeable changes in everything from cinematography and story to theme. Most importantly, however, is the portrayal of the warrior character itself in these new films. By comparing and contrasting how Japan, China (including Hong Kong), and South Korea portray and utilize the warrior in select films ranging from past to present, for my final project I will cross-analyze how changes in this genre reflect changes in each country's society as well as the effects of interacting with Western audiences.

Wellesley Treasures: Davis, French House & Special Collections (short talks)
Founders Hall 120

The Life of a 15th Century Manuscript: Wellesley College Manuscript 8

Valentina Grub '12, Classical Civilization and Medieval/Renaissance Studies
ADVISOR: *Matthew Sergi, English*

The Wellesley College Special Collections possesses a manuscript which contains four religious treatises written in Middle English.

The longest poem is the "Pricke of Conscience" which in its day was more popular than Chaucer's Canterbury Tales. By studying not only the texts in the manuscript but also the manuscript itself as an object, we can learn not only about the circumstances surrounding the composition, inscription, and production of this medieval manuscript, but also about its provenance -- that is, the history of its ownership and readership, which will result in a rich account that spans from fifteenth-century Northern English Abbey to twenty-first-century Wellesley.

Exploring Origin, Purpose, and Design of Textile Fragments from the James Jackson Jarves Collection

Andrea Gumushian '12, Art History
ADVISOR: *Jacqueline Musacchio, Art*

My spring independent study involves researching the James Jackson Jarves collection of textiles held in the Davis Museum. Jarves was an American expatriate, art historian, and collector, whose life in New England and Florence resulted in both respect and disappointment. My research focuses on the collection of Italian Renaissance textile fragments Jarves donated to the Durants in the late nineteenth century, a fraction of which were accessioned in 2001. I am researching and writing entries for some of the most important of these uncataloged textiles, using resources in the Davis Museum, College Archives, and other institutions to do so. The majority of the collection consists of Christian liturgical vestment fragments, thus my research considers religious practice, iconography, fashion, textiles, and embroidery. By enhancing our knowledge of the Davis Museum's collections, I hope my work will provide a valuable resource for future Wellesley students and faculty.

Dem Heim to La Maison Française: A History of 33 Dover Road

Rachel Swengel '14, French
ADVISOR: *Marie-Paule Tranvouez, French*

Since its construction 100 years ago, the house at 33 Dover Road has gone through many incarnations, such as a state senator's home, a faculty residence, a dilapidated blight, and the language-themed residence hall it is today. Its inhabitants and visitors, as well as the exemplary Arts-and-Crafts architectural details of the house itself, help show the fluctuating relationship between the local and the global. By revisiting past lives of the French House, we can better understand the history and the evolving goals of the Town of Wellesley, the College, and the generations who have passed through the house's doors.

Critical Interpretations: The Story Within the Story (short talks) Science Center 104

"A Separate Peace": Reading the First World War in Ernest Hemingway's In Our Time and A Farewell to Arms

Esther Kim '12, English
ADVISOR: *William Cain, English*

The Great War ended the lives of ten million human beings and blew apart "the beautiful lovely safe world" (F. Scott Fitzgerald). The aftermath of the War demanded that writers, including Ernest Hemingway, create literature that broke from the customary ways of storytelling. The form of Hemingway's stories conveys how the War shattered ideals of love, religion, and battle. Hemingway's *In Our Time*, an experimental collection of short stories and vignettes, fragments the cohesive narrative of the novel and plays with temporality, perspective, and voice in order to represent and express the iconoclastic consequences of the War. Meanwhile *A Farewell to Arms* represents a more coherent narrative through the single unified consciousness of Frederic Henry, but the collapse of past and present in his retrospective narration reflects the trauma of the War and responds to Ezra Pound's charge to "make it new."

Defined by Boundaries: The City in Fortunata y Jacinta and Bleak House

Claire Merrill '12, Comparative Literature
ADVISORS: *Timothy Peltason, English and Carlos Ramos, Spanish*

My thesis focuses on two 19th century authors, one English (Charles Dickens), one Spanish (Benito Pérez Galdós)-specifically, *Bleak House* and *Fortunata y Jacinta*. Both authors were prolific writers, widely read in their own countries during their lifetimes, and remaining popular today. Using exaggeration, humor, and colorful characters, Dickens criticizes London society and its institutions. An avid reader, Pérez Galdós said that he considered Dickens his most well-loved teacher and was proud to be called the Spanish Dickens. *Fortunata y Jacinta* was noted for its blatant critique of the middle class in Madrid. Two cities, Madrid and London, play significant roles in the novels- offering chances, choices, opportunities, and limits impossible to overcome. I consider the setting of each novel, the manner in which these vibrant cities inform the reader's understanding of the characters, of social responsibilities, of moral considerations, and ultimately of human nature.

Thomas Hardy and the Modernization of Agriculture

Meredith Ruhl '12, English
ADVISOR: *Lisa Rodensky, English*

Through his bleak representation of mechanized agriculture at Flintcomb-Ash Farm, Thomas Hardy, in his 1891 novel *Tess of the D'Urbervilles*, communicates the instability, lack of agency, and detachment from community that affect landless laborers. While the fullness of traditional rural life at Talbothays Dairy contrasts with the desolation of Flintcomb-Ash, the romanticized harmony of the dairy is limited. The alienation that characterizes modern farming later in the novel is in fact introduced while *Tess* is at Talbothays. My own experience working on farms drew me to examine this portrayal of nineteenth-century agriculture. Though Hardy firmly and convincingly critiques industrial agriculture in the novel, he resists the nostalgic idea that the past and the natural world offer idyllic alternatives to the unfulfilling present.

Musical Performance (long performance) Jewett Auditorium

Sara Li '13, English, Kathy Liu '13, Biological Sciences, Lucy Liu '13, Chemistry, Suyun Lee '12, Biological Sciences and English, Serena Liu '13, Biological Chemistry, and Irene Pang '13, Economics
ADVISOR: *David Russell, Music*

Sonata for flute, viola and harp:
Claude Debussy
Sara Li '13, flute
Kathy Liu '13, viola
Lucy Liu '13, harp
(coached by Suzanne Stumpf)

Piano Trio No. 2 in E Minor,
Op. 67: Dmitri Shostakovich
Suyun Lee '12, violin
Serena Liu '13, cello
Irene Pang '13, piano
(coached by David Russell)

In this second performance by the members of Wellesley's Chamber Music Society, we will offer two seminal works of the twentieth century: Claude Debussy's Sonata for flute, viola and harp, performed by Sara Li '12, flute, Kathy Liu '13, viola and CMS Co-President Lucy Liu '13, harp, and Dmitri Shostakovich's Piano Trio in E minor, Op. 67 performed by Suyun Lee '12, violin, CMS Co-President Serena Liu '13, cello and Irene Pang '13, piano. These Ruhlman performances are the culmination of year-long projects by these talented and dedicated students.

Science and Technology

Modeling, Math, and Molecules (short talks) Pendleton West 116

Modeling the Carbon Monoxide Spectrum

Lucy Archer '12, *Physics*
ADVISOR: Glenn Stark, *Physics*

Carbon monoxide (CO) is the second most abundant molecule in the universe. A comprehensive understanding of its ultraviolet absorption spectrum is essential to fully understand the photochemistry that shapes the chemical composition of astrophysical environments. To that end, my thesis has focused on developing the beginnings of a theoretical model for selected excited states in CO, with a goal of making this model match the experimental data. This model uses the "coupled Schrödinger equation" method, which is significantly more versatile than better-known perturbation theory.

Sourcing the Surface of the Asteroid Vesta: Here, There, or Everywhere?

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

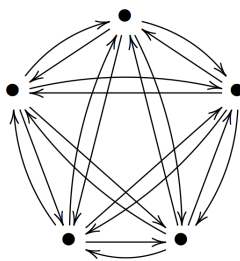
ADVISORS: Wendy Bauer, *Astronomy, and Joseph Boesenberg, American Museum of Natural History*

Howardite meteorites contain a mixture of crustal materials that have long been thought to be composed of fragments from a global mix of localities from the asteroid Vesta. Our work, however, suggests that most howardites consist of locally-mixed samples. Electron microscope X-ray element maps were made to determine the spatial distribution of the minerals in four howardites. The mineral distributions from the large clasts and mineral fragments were compared to the distributions in the small clasts and mineral fragments. Under normal conditions in a well-mixed rock, the mineral proportions in each size fraction should be approximately equal. In addition, chemical analysis of the mineral pyroxene in each meteorite was performed. The analysis shows whether pyroxene crystallized from a single magma or more than one and was subsequently mixed together and contains distinct populations. I will report on my results. (Research supported by the National Science Foundation.)

Universal Cycles for K-subsets of an N-set

Melinda Lanius '12, *Mathematics*
ADVISOR: Andrew Schultz, *Mathematics*

Universal cycles address questions in the field of discrete mathematics. They are one of the oldest mathematical objects, arising in diverse contexts: the creation of Sanskrit memory wheels, digital fault testing, pseudo-random number generation, modern public-key cryptography, and even mind-reading illusions. The idea of a universal cycle is to create a compact list of information within a string of characters. Existence results for universal cycles maximize efficiency, particularly in the expanding areas of encryption and data storage. I am exploring creating universal cycles of size- k subsets of the integers $\{1, 2, \dots, n\}$. (Research supported by a Schiff Fellowship.)



Child Birth, Neuron Death (short talks) Pendleton Hall East 139

Changing Faces? Facial Asymmetry and Ovulation

Julie Bass '12, *Anthropology*
ADVISOR: Adam Van Arsdale, *Anthropology*

Concealed ovulation and the loss of oestrus in Homo sapiens have induced practical questions in evolutionary anthropology related to conception, mating systems, and parental care. While humans do not possess obvious external indicators of ovulation compared to some other primate species, previous research has demonstrated that subtle cues to ovulation are in fact present in humans. These cues include changes in soft tissue features in the body (i.e. ears, fingers, and breasts), which seem to become more symmetrical in days leading up to ovulation. My research aims to detect whether the soft tissue in the face also changes across the ovulation cycle, using a 3D laser scanner to scan female participants' faces at two distinct points during the ovulation cycle, and conduct symmetry analysis based on facial landmark data derived from concepts in geometric morphometrics.

Understanding Neurodegeneration in Diabetes: Progesterone Action in the Peripheral Nervous System

Rebecca Muwanse '12, *Biological Sciences, and Sarah Finkelstein '14, Neuroscience*
ADVISOR: Marc Tetel, *Neuroscience*

Diabetic neuropathy is characterized by the loss of myelin fibers. Recent in vitro studies have shown that in myelinating glial cells, transcription of some myelin proteins is increased by the ovarian steroid hormone progesterone. Progesterone action is mediated by Progesterone Receptors (PR). The present study investigated the coexpression of PR and SRC-2 in female rat Schwann cells. Preliminary immunofluorescence studies reveal that PR are coexpressed with SRC-2 in the nucleus of Schwann cells. These findings provide anatomical evidence for the participation of SRC-2 in the PR-mediated transactivation of myelin upregulators in Schwann cells of the peripheral nervous system.

Displaced People, Emplaced Births: Medicalized Childbirth in the Tibetan Diaspora

Shannon Ward '12, *Anthropology*
ADVISOR: Deborah Matzner, *Anthropology*

This presentation explores childbirth narratives of Tibetan exiles living in India. In India, women seek biomedical obstetric care; in Tibet, most women give birth at home. Biomedical hegemony, kinship, and citizenship shape this dynamic. In Tibet, a mistrust of Chinese hospitals due to coercive reproductive regulation discourages women from accessing biomedical care. However, these anxieties come into tension with experiences of birth complications at home. In India, this tension is eased, since women emphasize their "freedom" to access reproductive health care. And, given the absence of kin networks to aid women throughout labor, many give birth in hospitals. By juxtaposing memories of childbirth in Tibet with experiences of childbirth in exile, my informants' narratives point to the ways that reproduction figures as a symbol used to interpret ethnic, political, and familial belonging. (Research supported by the Office of the Dean of the College and the Sudbury Foundation.)

Methanol Radiolysis of Astrochemical Interest

(panel discussion) Pendleton Hall 339

Mavis Boamah '14, Chemistry, Kristal Sullivan '12, Chemistry, and Farrah Yhee '14, Mathematics

ADVISOR: *Christopher Arumainayagam, Chemistry*

The interactions of high-energy radiation with matter produces large numbers of low-energy secondary electrons, which are thought to initiate radiolysis reactions in the condensed phase. Using infrared reflection absorption spectroscopy (IRAS), we have investigated the radiolysis products formed by low-energy (< 20eV) electron-induced reactions in condensed methanol under ultrahigh vacuum conditions. In contrast to temperature programmed desorption (TPD), a post-irradiation technique we have used previously, IRAS does not require thermal processing prior to product detection. Our goal is to simulate processes which occur when high-energy cosmic rays interact with interstellar ices, where methanol, a precursor of several prebiotic species, is abundant. The results of experiments such as ours may provide a fundamental understanding of how complex molecules are synthesized in the interstellar medium. (Research supported by Brachman Hoffman, NSF-RUI, and NSF-REU.)

Social Sciences

Student Becomes the Teacher: Understanding How We Learn (short talks) Jewett Art Center 450

The Squeaky Wheel

Gissell Castellon '14, Mathematics and French
ADVISOR: *Veronica Darer, Spanish*

Through the use of discourse analysis, I researched my own teaching practices and pedagogical interactions with students from a SAT prep program. The program expands college access to low-income high school students by providing free SAT preparation and college admissions counseling. Through the analysis of quantitative and qualitative data of teacher and student interactions during a math tutoring session, I became acutely aware of the inequitable opportunities students faced as a result of differences of participation that impacted their ability to expand and deepen their mathematical knowledge and skills.

Generating Standing Wave Understanding: Designing an Introductory Physics Lab

Hannah Herde '14, Physics and Classical Civilization, and Deepika Ranjan '14, Economics and Mathematics
ADVISOR: *Theodore Ducas, Physics*

The goal of this team is to develop a prototype Physics 107 - introductory mechanics - laboratory emphasizing key concepts and phenomena in standing waves and vibrations. Such a lab should (a) challenge students intellectually and b) communicate the physics effectively without drawing conclusions for students. We believe that when students are challenged to draw their own conclusions, they find the results more exciting and engaging, and therefore, more memorable. Using the course curriculum and other labs as a backbone structure, we aimed to design experiments that would facilitate the student's ability to form connections between concepts, particularly through designing complementary exercises. In the process, we considered the limitations in the apparatus and the kinds of modifications or alternatives that would be necessary for the experiment to proceed smoothly.

Reconsidering Math Gender Stereotypes in a Single-Gender College Context

Julia Martin '12, Psychology and Classical Civilization
ADVISOR: *Nancy Genero, Psychology*

Mathematics continues to be a male-dominated field. According to Halpern et al. (2007), fewer women are choosing to study math in comparison to men, and under certain contexts, women are even underperforming in math relative to men (e.g. Rivardo et al., 2011; Good, Aronson, & Harder, 2008). Survey data collected from students attending Wellesley College will be examined in order to ascertain how women in a single-gender college environment (a relatively unexamined subset of the female population) perceive their performance in math and statistics courses and are affected by math gender stereotypes.

Science Outreach: From Student in the Classroom to Teaching Middle School Girls

Amy Wolkin '12, Biological Sciences
ADVISORS: *Jocelyne Dolce, Biological Sciences, and Connie Bauman, Physical Education, Recreation and Athletics*

After studying exercise physiology in New Zealand, I was inspired to design and implement an exercise physiology curriculum for Science Club for Girls, Newton Chapter. Although I had no prior teaching experience, my passion for the subject led to my quest to educate middle school girls on exercise physiology. In the fall semester, I developed a curriculum and prepared seven lesson plans for implementation by Wellesley College SLAM DUNK mentors/teachers (Science Learning and Mentoring: Discovering and Understanding New Knowledge). Throughout the spring semester, both attitude and content assessment were administered. I will present statistical findings determining whether Science Outreach lessons had an impact on attitudes towards science and understanding of the content. By mentoring middle school girls, we not only want young females to learn about exercise physiology, but also to become more confident and engaged as emerging scientists.

Relax! The Social and Physical Effects of Stress (short talks) Pendleton Hall West 212

A Critical Review of Mindfulness-based Treatment for Combat-related Post-traumatic Stress Disorder

Jiun-Yiing Hu '14, Neuroscience
ADVISOR: *Paul Wink, Psychology*

Combat-related post-traumatic stress disorder (PTSD) is an extreme response to life threatening and traumatic war experiences that can result in chronic personal disability and significant negative societal consequences (e.g., domestic violence, unemployment). Although there has been considerable progress over the past decade in understanding and treating the underpinnings of PTSD, no single intervention has demonstrated to be universally effective. Mindfulness-based approaches, derived from Buddhist meditative practices of present-centered awareness and emotional regulation, aim to address the neurobiology of PTSD rather than its physiological symptoms and comorbidities. This presentation focuses on research findings from ground breaking third-wave mindfulness-based psychotherapy

approaches to the treatment of PTSD that focus on changing neural functioning as assessed by fMRI and PTSD symptom measures. Mindfulness shows great promise as a non-intrusive way to help combat veterans approach and respond to their traumatic memories, reduce polypharmacy, and produce significant improvements across multiple modalities of psychosocial functioning.

Sensitivity to Socioeconomic Status as a Predictor of Stress Level

Claire Lee '12, Psychology, and Lydia Mathewson '12, English and Psychology
ADVISOR: *Sally Theran, Psychology*

Research shows that low socioeconomic status (SES) in college students predicts relatively lower grades, a higher drop-out rate, and higher levels of stress. To examine the relations between SES, stigma sensitivity, and stress levels, 126 undergraduates completed questionnaires as part of a greater study on well-being. SES was hypothesized to be negatively correlated with stigma sensitivity, and with stress levels in terms of both perceived stress and stressful life events. Stigma sensitivity was also expected to moderate the relation between SES and stress. This moderation was tested through regression analyses. None of the hypotheses were supported, except that SES was negatively correlated with stigma sensitivity. Instead, stigma sensitivity was negatively and significantly correlated with stressful life events. This implies that lower income does not cause stressful life events, but these events are related in some way to how one sees oneself in relation to one's peers and social situation.

Friendship Satisfaction as a Moderator between Co-rumination and Stress

Rebecca Richardson '12, Psychology, and Charleen Wilder '12, Psychology
ADVISOR: *Sally Theran, Psychology*

This study examined the effects of co-rumination, the excessive discussion of problems within same-sex friendships, on perceived stress and the potential for friendship satisfaction to moderate this relation. Correlation and regression analyses indicated that co-rumination was not significantly correlated to perceived stress. Nor did results support the role of friendship satisfaction as a moderator in the relation between co-rumination and perceived stress. However, the authors observed positive correlations between co-rumination and both friendship satisfaction and perceived stress when only

participants who reported high levels of co-rumination were considered. These results suggest that individuals who co-ruminate frequently within their friendships regard co-rumination as a positive aspect of those friendships. Consequently, co-rumination may be a protective factor within friendships even though it increases stress in individuals.

The Effect of Sociocultural and Maternal Pressures Relating to a Thin Body Type on Female Students' Body Image Satisfaction and Eating Behaviors

Cathy Zhang '12, Political Science and Psychology, and Emma Townsend-Merino '12, Psychology, Women's and Gender Studies
ADVISOR: *Sally Theran, Psychology*

This study explored two factors, perceived sociocultural and maternal pressures relating to a thin body type, and their effect on 126 female college students' body image satisfaction and maladaptive eating behaviors. Using regression analyses, these two factors were explored to determine which was the better predictor of poor body image and eating problems in women. Results showed that higher levels of both perceived sociocultural and maternal pressures relating to a thin body type were strong independent predictors of poorer body image. However, as for maladaptive eating behaviors, once perceived sociocultural pressures were controlled for, maternal pressures no longer significantly predicted maladaptive eating behaviors. Implications, including the role of informational and normative social influence, are discussed.

Keeping the Peace: Global Struggles (short talks) Pendleton Hall 239

The U. N. in Somalia (1992-1995): History of a Military Humanitarian Intervention

Ayan Ali '14, International Relations-Political Science
ADVISOR: *Lidwien Kapteijns, History*

This presentation focuses on the U.N.'s military humanitarian intervention in Somalia (1992-1995), to which the U.S. military initially provided most of the troops. U.S. spokesmen such as Ambassador Robert Oakley blamed this debacle on the UN's nation-building project in Somalia, contrasting it to the U.S.'s pragmatic policy of containing the famine that triggered the intervention. This presentation will question

this political 'spin,' analyze the U.N. - U.S. relationship as a cause of the mission's failure, and outline the impact on Somalia.

Lessons for Tibet: A Comparative Analysis of Nonviolent Movements in India, US and Egypt

Tenzin Dongchung '13, Peace and Justice Studies

ADVISOR: *Catia Confortini, Peace and Justice Studies*

History is a testament to the fact that apart from few separate cases, the Tibetan struggle has consistently adhered to nonviolent means, whether it is in the government's attempt at negotiation or ordinary Tibetans' participation in protests around the world. However, the recent series of self-immolations erupting inside Tibet questions both the prospects and sustenance of a nonviolent Tibetan movement. I analyze three successful nonviolent movements; India's struggle for independence, America's civil rights movement and Egypt's revolution. Drawing from an evaluation of features that made these movements successful, the two central questions that arise are: how can we use the lessons of other movements to strengthen or reflect differently on the Tibetan struggle? What does this process reveal to us about the unique challenges and limitations that the Tibetan struggle faces.

Defying "Dirty Work": Custodial Workers and Union Organizing at Colleges and Universities

Claire Fogarty '12, Women's and Gender Studies and Spanish

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

In June 1990, the Justice for Janitors campaign was launched in Los Angeles when contract employees who cleaned downtown office buildings went on strike for their right to secure a union contract. After two weeks of negotiation in which protesters faced police brutality, the "janitors" were granted a union contract and started a nationwide movement, effecting employees in every part of the cleaning industry. Union organizing allows cleaning workers to not only improve job conditions, but also to construct occupational identities and self esteems, defying negative social perceptions surrounding their jobs. This issue is especially salient at colleges and universities, where stigmas and institutional priorities lead to custodial workers being seen

as second-class “invisible workers” practicing undesirable “dirty work.” This presentation will synthesize preexisting academic scholarship with personal interviews of workers at area institutions, providing a comprehensive picture of union organizing among college custodial workers today.

African Unification and Economic Integration: Lessons from Historical Challenges and Current Opportunities

Samantha Malambo '12, Economics and Africana Studies

ADVISOR: *Selwyn Cudjoe, Africana Studies*

Scholars such as Henry Williams and Marcus Garvey undeniably had a great influence on the dawn of the notion of Pan-Africanism. Leaders such as Kwame Nkrumah and Muammar Gaddafi have often talked and written about the subject as well. My thesis is looking at just how effective the currently existing African Union has been at achieving the goals for which it was established. I also compare the African Union to the smaller country blocks of the Economic Community of West Africa (ECOWAS) and the Southern African Development Community (SADC). Combining historic hopes and challenges with current opportunities, I hope to understand how possible and fruitful it would be to have more unified and economically integrated African continent.

The Politics of Democracy & Democratization of Politics (short talks) Science Center 278

Reasons Behind the Rise of Julius Malema

Samantha Crowell '12, Africana Studies and Political Science

ADVISORS: *Pashington Obeng, Africana Studies and Donna Patterson, Africana Studies*

Julius Malema is perhaps one of the most contentious figures in modern South African politics. He is beloved by the ANC's grassroots base of poor and underprivileged South Africans and he is simultaneously ridiculed and disdained by South Africa's politically powerful elites. My paper argues that Malema's rise to power has been prompted by distinct factors such as a vacuum of leadership within the ANC, service delivery issues as well as dissatisfaction amongst the country's youngest generations and the poor. Julius Malema is a major public figure in South Africa; he has the ability to stir the poor majority into a potentially violent revolt

against the status quo. The rise of Julius Malema as a popular political figure illustrates deeper issues within the South African political and economic climate and the country's desire for tangible change. (Research supported by a multicultural grant.)

Yes We Can: The Democratizing Impact of Social Media on Political Organizing

Elizabeth Pan '12, American Studies

ADVISOR: *Eniana Mustafaraj, Computer Science*

Social media has transformed the political landscape of elections; it has become the ultimate democratic tool, allowing millions to make their voices heard. My presentation offers an overview of the findings from my thesis, which focuses on the impact of social media on grassroots political organizing. It includes historical research on the rise of social media, analysis of field data gathered during the 2008 Obama Campaign, interviews with my colleagues from the Obama Campaign, and illuminating anecdotes from my own experiences as a Field Organizer. My thesis aims to offer a new understanding of how political organizing has changed, for better or worse, as a result of the advent of social media. (Research supported by the Barnette Miller Honors Grant.)

Assimilation or Subversion: Re-appropriating Cultural Myths in the American Master Narrative

Anna Talley '12, Political Science

ADVISOR: *Laura Grattan, Political Science*

Liberalism theoretically supports and advocates for the assimilation of minority groups into society. However, the United States has historically been unable to robustly incorporate others into its master narrative used to explain the American history and experience. The cultures of minority groups are frequently oversimplified and reduced to benign narratives that support this American redemption narrative. In order to create a cohesive narrative, events like the Civil Rights Movement are recast as the triumph of American ideals. Authors such as Gloria Anzaldúa re-appropriate cultural myths and legends in order to reclaim a forgotten identity and subvert the primacy of the American master narrative. I will look at the effects of such re-appropriation narratives on American liberalism.

The Foreign “Other”: Uses of the International Context in Political Propaganda of England during the Late Seventeenth Century

Hilary White '12, History and Mathematics

ADVISOR: *Ryan Frace, History*

My thesis explores the use of the international context in the political propaganda campaigns of England during the 1688 Revolution. I focus on how English propagandists presented Ireland, Scotland, France, and the Dutch Republic in their writings and demonstrations to impact and influence political sentiments regarding domestic issues, such as religion, toleration, and the rights of the monarchy. By examining the extent to which allusions to foreign political, religious, and ideological issues appeared in various popular media forms (i.e. sermons, pamphlets, etc.), this thesis investigates how international concerns shaped the domestic struggles and debates of the late seventeenth century in England.

Watch Your Language (short talks) Pendleton Hall West 117

Identifying Idiosyncratic Phonemes in Korean-English Bilinguals: Production of Constructed Vowels

Yoolim Kim '12 Cognitive and Linguistic Sciences

ADVISOR: *Angela Carpenter, Cognitive and Linguistic Sciences*

This research studies the phenomenon of Korean-English bilinguals producing errors in both their first and second languages (L1 and L2). Pronunciation errors occur because of differences in acceptable sounds in each language or in allowable sound combinations. Native Koreans learning English, for example, have difficulty differentiating between /ɛ/ and /æ/ due to a lack of distinction in Korean. Therefore, words such as 'pen' and 'pan' prove difficult for learners. While errors in the L2 are accountable, pronunciation errors in the L1 are more unusual. To investigate L1 pronunciation errors, I analyze vowel production, studying “melded” vowels created by a combination of Korean and English phonemes. I posit that certain Korean-English bilinguals demonstrate incomplete acquisition of both L1 and L2 phonologies, combining incomplete phonemic inventories to complete one inventory specific to that individual that is not fully characteristic of either L1 or L2, but still contains sounds from both.

Rapid Prototyping for Everyone

Ana Smaranda Sandu '14, *Computer Science and Mathematics*

ADVISOR: Franklyn Turbak, *Computer Science*

PictureBlocks is a visual programming environment I developed this past year that enables users with no previous programming experience to create programs that generate intricate patterns by composing and transforming simple pictures. In PictureBlocks, users construct programs by snapping together jigsaw-like blocks, thereby avoiding many of the syntactic problems (missing semicolons, misspelled words, etc.) that frustrate novices using textual programming languages. The resulting patterns can easily be cut/engraved in wood and plastic by a laser cutter or cut out of cardstock and vinyl by a vinyl cutter. I have used PictureBlocks to explore making these two rapid prototyping machines in Wellesley's Engineering Studio more accessible to members of the Wellesley community. In addition to creating interesting physical artifacts, users of PictureBlocks are exposed to fundamental concepts in geometry and programming.

Watermelon, Honeydew, and Antelope: An ERP Study of Semantically Anomalous but Phonologically Expected Words in Highly Constrained Sentences

Laura Stearns '12, *Neuroscience*

ADVISORS: Catherine Wearing, *Philosophy and Ted Gibson, Brain and Cognitive Sciences (MIT)*

The “noisy channel” model of language predicts that in human cognition, boundaries between syntax and semantics are less important than a listener's ability to infer an utterance's meaning. Because neural activity generates voltage changes on the scalp, researchers can use this electrical activity to gain insight into cognition. Similar events generate characteristic voltage changes, called event-related potentials (ERP). For example, the P600 ERP component has historically been identified with syntactic processing. However, the noisy channel model deemphasizes syntax, and so predicts the cognitive activity generating the P600 is not processing syntax but rather inferring meaning when an utterance is likely an error. I have recorded ERPs evoked by sentences with the last word replaced by a phonologically similar word likely to be an error. This presentation will describe these results and their implications for language. (Research supported by a Schiff Fellowship.)

Improving Types in Block-based Programming Languages

Marie Vasek '12, *Computer Science*

ADVISOR: Franklyn Turbak, *Computer Science*

In blocks programming languages, such as Scratch and App Inventor, programs are created by connecting visual program fragments shaped like jigsaw puzzle pieces. The shapes of these blocks help novices avoid frustrating syntax errors commonly encountered in textual programming languages by strongly suggesting how pieces fit together. In statically typed programming languages, every expression has a type that indicates the kind of value it denotes (e.g. number, string, boolean). The shapes of block connectors can be used to indicate type, but existing block languages handle only simple types and do so in an ad hoc and confusing fashion. Inspired by the expressive type system of the ML programming language, I developed a statically typed blocks language for a functional language with list, tuple, and function types where each arbitrarily complex type is represented by a unique connector shape.

Humanities

Persuasive Images: Art, Visual Culture, and Everyday Belief (panel discussion) Pendleton Hall West 212

Nicole Gebriel '12, *Media Arts and Sciences*, Alexandria Icenhower '12, *Political Science*, Linnea Johnson '12, *Art History*, Mische Kang '13, *Environmental Studies*, Darcy Kupferschmidt '12, *Art History and Japanese Language and Literature*, Laura Marin '13, *Art History*, Tanushree Naimpally '13, *Art History and English*, and Emma Weinstein-Levey '12, *American Studies*

ADVISOR: Patricia Berman, *Art*

This session showcases the topics that students in ArtH 391/ CAMS 391 pursued for their seminar reports in Fall 2011. The course examined the intersection of modern art and the cultures of propaganda and persuasion in the 20th and 21st centuries. The projects include the visual rhetoric of, among others, national elections, science fiction, World's Fairs, stereotype formation, and consumer culture. Collectively, the class examined the ways in which the visual and built environment mediate individual and collective understanding.

Ancient Times: Modern Dilemmas (short talks) Science Center 104

Satire, Social Identity, and Classical Tradition: Paideia in Lucian

Lynn Gallogly '12, *Classical Civilization*

ADVISOR: Catherine Gilhuly, *Classical Studies*

Education has the power both to preserve traditions and to challenge them, and this is nowhere more evident than in the writing of the second-century Greek satirist Lucian. Lucian wrote during a period when education (paideia in ancient Greek) was an important marker of social status as well as a means of preserving the past. As a native Syrian, as opposed to ethnic Greek, his place in elite Greek-speaking society was dependent upon proving that he was educated, and he does this by drawing extensively from traditional classics of Greek literature and rhetoric. However, his works also reflect awareness of his status as an outsider and of the gap between the idealized past and present reality. In pieces such as *Somnium* (The Dream), Lucian cleverly subverts traditional themes and allusions in ways that question the validity of his self-representation and of paideia as an instrument of social status.

The Diffusion of Luxury in Ancient Rome

Mannat Johal '12, Classical Civilization
ADVISOR: *Raymond Starr, Classical Studies*

In my thesis, I attempt to deconstruct the notion of luxury, moving towards a definition that is not limited to silks and spices and whims of an aristocracy, but goods and practices that have symbolic value throughout society and experience diffusion within the various strata. Using a theoretical framework drawn from the modern anthropological discourse about commodities and commodity culture, as well as literature on sumptuary legislation, I examine the particular case of burial practices in Ancient Rome, how they were subject to diffusion in society, and what this diffusion could tell us about the social structure within which it flourished.

Cross-Dressing Martyrs: The Gender Dynamics of Paul and Thecla's Spiritual Love

Sara Putterman '13, Art History and Religion
ADVISOR: *Edward Silver, Religion*

Violence and eroticism are two key elements in the narrative of The Acts of Paul and Thecla. Gender-bending imagery, spiritual love, and submissive acceptance of violence are characteristic of both male and female Christian martyrs. Despite the seemingly brazen acts of the main female character, in no way can this story be claimed as a feminist text. Instead, the sadistic image of the non-Christians is meant to highlight their enslavement to worldly passions, while the almost masochistic image of Thecla, as a martyr and as a woman, reveals her desire to sublimate her identity into the body of Christ.

Forging an Identity in a Hostile World (short talks)

Science Center 278

From Israelite to Jew: Anti-Semitism in Vichy France and its Impact on French Jewish Identity after WWII

Rukmani Bhatia '12, International Relations-History and French Cultural Studies
ADVISOR: *Venita Datta, French*

During WWII, France lost 25% of its Jewish population. While French leaders after the war focused on the 75% of Jews saved during the war, history sees these statistics as a failure. The issue is not how many Jews Vichy saved but rather how many Jews Vichy ostracized, abandoned and deported. Without

any German influence, the Vichy Regime passed anti-Semitic legislation that stripped French Jews of their citizenship and allowed for the internment and deportation of foreign Jews to camps in Eastern Europe. Post WWII, the French, united around a myth of a heroic French resistance, believed the crimes committed by Vichy were German crimes. Only in the 1960s was that myth shattered; French anti-Semitism, not Nazism, had driven Vichy's actions during the war. Through an examination of Vichy's actions and its subsequent effects on the Jewish community, it is possible to understand the transformation of Jewish identity in France.

"Awakening" Country and Faith: The Construction of Sino-Muslim Histories and Identities in the Early Twentieth Century

Mengyu Huang '12, East Asian Studies and Economics
ADVISORS: *C. Pat Giersch, History and Yoshihisa Matsusaka, History*

Today, China prides itself as a nation of fifty-six officially-recognized ethnic groups, including ten predominantly-Muslim ethnicities. Of the ten, the most populous are the Hui or Sino-Muslims. Yet Hui did not always exist as an ethnic category. As China transitioned from empire to modern nation-state in the twentieth century, new forms of identity emerged. Sino-Muslim intellectuals held different views about whether all Muslims in China comprised one nationality or were ethnically different while sharing one common religion. This internal debate provides the key to understanding how the terms "Hui" and "Huizu" underwent the curious transformation from a religious to an ethnic marker. Reevaluating Hui agency, my research examines the strategies used by Sino-Muslims to construct their collective identity and how these active efforts, in addition to state actions, contributed to the eventual recognition of an autonomous Hui nationality. (Research supported by a Jerome A. Schiff Fellowship.)

Creating Culture: Transculturation and Identity in Cuba

Nia Phillips '12, Political Science and Spanish
ADVISOR: *Koichi Hagimoto, Spanish*

Cuba, an island country in the Caribbean, has a rich cultural history. Colonized by the Spaniards, many interactions have occurred between groups of people traditionally separated by the physical distance. After the

colonization, Cuba quickly became a multi-racial country with people from Europe, Africa, and Asia. How could such a diverse country possibly have a "national" identity? Through the analysis of *Monkey Hunting* by Cristina García, this paper examines the process of identity formation based on the concept of "transculturation." García's novel narrates the story of multiple generations of a Chinese-Cuban family from the Spanish colonial era to the 1960s. By using the fictional character's experience as the foundation of my study, I seek to explore the complexity of constructing a cultural identity within such a mixed society, or hybrid culture, as Cuba.

The Chinatown Squad: The Policing of Belonging in Late Nineteenth-century San Francisco

Rachel Shuen '12, History and Spanish
ADVISOR: *Ryan Quintana, History*

Anti-Chinese sentiment pervaded late 19th century U.S. society. Chinese people in America faced discriminatory economic, social, and legal policies, which culminated in the Chinese Exclusion Act of 1882. This federal law targeted the Chinese as the first group for immigration and citizenship exclusion. My project builds upon historical studies about anti-Chinese racism and exclusion by addressing the creation of a problematic police force, the Chinatown Squad, which marked a racialized people and neighborhood for surveillance and discipline. The inauguration of the Chinatown Squad reflected important shifts in the policies of the municipal government and the San Francisco Police Department. Examining the expansion of the police force in the name of public safety alongside the municipally-directed policing of a racialized neighborhood will complicate our historical understanding of anti-Chinese rhetoric and violence. (Research supported by the Jerome A. Schiff Fellowship and Henry Schwarz Fellowship.)

Two Musical Performances

Jewett Auditorium (short performances)

Theme and Creativity: Lutoslawski's Paganini Variations

Michelle Lam '14, Economics
ADVISOR: *Jenny Tang, Music*

Niccolò Paganini's virtuosic *Caprice no. 24 for unaccompanied violin* (1805) has inspired countless variations, from Brahms to Rachmaninov, from light cello jazz to heavy metal. Witold Lutoslawski (1913-1994), a major twentieth century composer from

Poland, added to this collection his own thoroughly energetic and contemporary arrangement for two pianos (1941), which I will be performing with Jenny Tang, performing faculty. After the performance, I will discuss the relationship between the original work and Lutoslawski's arrangement, touching on his usage of the modal harmonic scheme and his consideration of extended piano technique.

Para las Seis Cuerdas: La Milonga y la Guitarra

Adelene Lai '15 Undeclared, Pin Pravalpruhskul '12, Environmental Studies, and Miryam Saad '13, Biological Chemistry
ADVISOR: *Glorianne Collver-Jacobson, Music*

Often referred to as the "older brother" of tango, the milonga is a genre of folk music that originated in the Rio de la Plata region of Argentina and Uruguay. It was derived from the payada de contrapunto: a practice in which two singers (payadores) accompanying themselves on the guitar would improvise lyrics competitively, almost in the manner of a singing duel. From this improvised song, the milonga evolved into a syncopated dance form that would later influence the tango. The milonga has had a special relationship with the guitar, and occupies a cherished place in the heart of Argentine writer Jorge Luis Borges whose milonga poems appear in his work *Para las seis cuerdas*. Our performance will feature instrumental milongas performed on guitar and a recitation of Borges's "Jacinto Chiclana" set to music by Astor Piazzolla.

The World of Jazz Strings: Changing, Innovating and Honoring a Musical Tradition (short performance) Pendleton Hall West 220 Music Salon

Victoria Boyd '12, Chemistry, Julia Cohen '14, English and Classical Civilization, Serena Eastman '12, Neuroscience, Elizabeth Lawler '12, Chemistry, Kyung Hwa Lee '12, Biological Sciences, Emily Nice '15, Undeclared, Allyson Pyers '15, Undeclared, and Laura Stearns '12, Neuroscience
ADVISOR: *Paula Zeitlin, Music*

Although string instruments are traditionally associated with elegant classical compositions and rollicking folk music, string players also have a legacy in the world of jazz. Wellesley BlueJazz (WBJ) Strings is Wellesley's only string ensemble that delves into this genre. Structured as a classical string ensemble with violins, violas, and cellos, WBJ Strings is a

versatile group with a repertoire that includes Latin, rock, and blues in addition to jazz. We invite you to savor this fusion of jazz and string instruments as we perform!

Science and Technology

Still the Most Attractive Lab at Wellesley: Probing Biomedical Problems with Magnetic Resonance (panel discussion) Science Center 396

Yi Ling Dai '13, Neuroscience, Stephanie Huang '12, Chemistry, Palig Mouradian '13, Neuroscience, Rachel Parker '13, Chemistry, Heather Pearson '14, Anthropology, and Jasmine Rana '12, Chemistry
ADVISOR: *Nancy Kolodny, Chemistry*

Our research group uses the non-invasive techniques of magnetic resonance imaging (MRI) and spectroscopy to investigate biomedical phenomena. We investigate neuroanatomy, neurometabolite levels, and behavior of a mouse model of Schizophrenia to establish a baseline for therapeutic studies. We are synthesizing a multipurpose nanoparticle that will target pancreatic cancer cells, selectively irradiate tumors, and be noninvasively imaged using MRI. We use Blood-Oxygenation Level Dependent functional MRI to investigate regions of the brain that participate in song learning of the Zebra Finch. MRI is used in real time to observe the pathway of neurogenesis in *Procambarus clarkii*, a crayfish.

Through the Looking Glass: a Neurochemical and Behavioral Investigation of a Mouse Model of Schizophrenia

Stephanie Huang '12, Chemistry, Palig Mouradian '13, Neuroscience, and Heather Pearson '14, Anthropology and Chemistry
ADVISOR: *Nancy Kolodny, Chemistry*

Schizophrenia is a devastating psychiatric condition marked by severe cognitive impairments, brain anatomy alterations, and abnormal neurotransmitter activity. This study uses the genetically modified GCPII[±] mouse model, which has reduced glutamate carboxypeptidase II enzyme activity to mimic the hypoglutamatergic pathways observed in schizophrenia. The longitudinal portion of this study employs the non-invasive techniques of magnetic resonance imaging (MRI) and spectroscopy (MRS). MRI is used to examine the volumes of brain structures affected by

schizophrenia in humans. MRS is used to measure neurometabolite levels in the brain. Another portion of this study investigates the social behavior of normal and GCPII[±] mice using behavioral paradigms. By comparing the developmental brain structural volume, metabolite levels, and sociability of normal and GCPII[±] mice we can determine if this model is a successful model for schizophrenia. (Research supported by the Staley Award for Cancer-related Research and the Beck Senior Fellowship Program.)

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

Yi Ling Dai '13, Neuroscience
ADVISORS: *Nancy Kolodny, Chemistry, and Barbara Beltz, Neuroscience*

The birth of new neurons in the adult brain has been discovered in organisms ranging from humans to the crayfish. A cluster of neural precursor cells residing in a "neurogenic niche" has been identified in our animal model, the crayfish *Procambarus clarkii*. However, because all daughter cells from the niche migrate away to their final destinations in the brain, an extrinsic source of neural precursors must exist, although its identity remains unknown. By employing magnetic resonance imaging (MRI), we are evaluating our hypothesis that hematopoietic stem cells (HSC) serve as neural precursors in adult neurogenesis. The migration of cells is observed through the MRI tracking of superparamagnetic iron oxide particle (SPIO) labeled hemocytes from *Procambarus clarkii*. To increase the efficiency of visualizing cell migration, techniques to isolate a candidate neuronal precursor cell type, the semi-granular cells, are being developed. (Research funded by the Staley Summer Award for Cancer-related Research, and Howard Hughes Medical Institute.)

A Multifunctional Nanoparticle for Targeted Tumor Therapy

Jasmine Rana '12, Chemistry
ADVISORS: *Nancy Kolodny, Chemistry, Nolan Flynn, Chemistry, and Andrew Webb, Biological Sciences*

Given their small size, low toxicity, and convenient surface chemistry, nanoparticles (particles hundreds of thousands times smaller than a dust mite) have emerged as effective platforms for developing a new generation of targeted biomedical therapies for cancer. Our goal is to create a multifunctional nanoparticle that can

1) target tumor cells, 2) kill cancerous cells, and 3) be visualized using magnetic resonance imaging (MRI). Building on previous studies, work is being done to optimize the synthesis of a protective coating around the nanoparticle's iron oxide core, which enables its use as a MRI tracking agent. Future work will focus on attachment of anti-cancer moieties onto the particle's coating and in vivo testing on a mouse model. (Research supported by the Schiff Fellowship and Individual Faculty Awards from Roberta Day Staley and Karl A. Staley Fund for Cancer-Related Research Awards.)

Launching a Novel fMRI Study of Memory Acquisition and Vocal Learning in the Songbird Model

Rachel Parker '13, Chemistry

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

Songbirds, zebra finches in particular, provide an especially useful cognitive model for the acquisition of human speech due to the many parallels between bird song and human speech. One of the most notable similarities we share with songbirds is a sensitive learning period dependent on auditory experience and feedback. Our laboratory is conducting a functional magnetic resonance imaging (fMRI) study aimed at identifying the areas of the brain involved in song acquisition in our model organism, *Taeniopygia guttata*. With our micro-MRI system we have acquired well-resolved anatomical images of anesthetized birds. Our investigation of various pulse sequences will enable effective use of blood oxygen level dependent (BOLD) fMRI and other potential imaging techniques. Other challenges in this new study include recording and play-back of sound in the MRI for our preliminary experiments and developing an experimental paradigm appropriate for this unique study. (Research supported by the Howard Hughes Medical Institute.)

Control of Biology by the Organic Chemist (panel discussion) Pendleton Hall West 116

Shoshana Bachman '12, Erika Buckle '12, Chemistry, Chemistry, Kristen Hobbs '13, Neuroscience, Elizabeth Regan '12, Chemistry, Hannah Stone '14, Chemistry, and Ashton Vattelana '13, Chemistry
Advisor: *David Haines, Chemistry*

Organic chemistry provides us with the tools to control many biological functions. Our lab is interested in interactions of

organic molecules with specific biological systems. We will discuss a range of problems including Chlamydia, diabetes, and the bonding behavior of organic ions in solution. The first project is focused on synthesizing a molecule designed to allow patients to develop long-term immunity to Chlamydia. The second project will result in the synthesis of an analog of a small molecule inhibitor to examine the three-dimensional structure of GLP-1R, the protein in the pancreas that initiates insulin production. The third is designed to develop an understanding of the interactions of charged organic molecules with solvents, since many biological interactions are based on intermolecular interactions with charged organic species. Ultimately, the results will help develop better treatments for Type II Diabetes and Chlamydia. (Research supported by Sherman Fairchild Foundation Summer Research Award, Howard Hughes Medical Institute, Brachman Hoffman Fund, Bloomfield Junior Fellowship, Beck Senior Fellowship, NSF-REU Chemistry, Faculty Awards, Norris-Richards Summer Scholarship, and Keck Foundation.)

Molecular Matchmaking: How Do Proteins Find Each Other? (panel discussion)

Pendleton Hall East 139

Amelia Kreienkamp '13, Chemistry, Lucy Liu '13, Chemistry, Priyanka Nakka '12, Chemistry, Helena Qi '14, Undeclared, and Ying Yi Zhang '13, Economics
ADVISOR: *Mala Radhakrishnan, Chemistry*

Opposites attract? If only drug design were so easy... Understanding determinants of electrostatic binding is essential in designing tight-binding drugs with tailored specificity. The Radhakrishnan laboratory uses computational techniques, which allow us to conduct experiments that cannot be done in vivo or in vitro, to study the physical determinants of molecular binding and recognition. Our projects focus on developing and improving methods of modeling electrostatic interactions, and probing the structural characteristics important to binding in protein complexes and other biological systems. We hope that our results will provide physical insights into molecular binding and help us become better matchmakers for drugs and their targets.

Engineering for Humanity: Helping Elders Age in Place through Partnerships for Healthy Living (panel discussion) Founders Hall 120

Tiffany Chan '12, Psychology and Economics, Elizabeth Doyle '15, Mechanical Engineering (Olin) Sharon Grimshaw '15, Engineering (Olin), Janie Harari '15, Mechanical Engineering (Olin), Christine Keung '14, Economics and Environmental Studies, Melisa Lopardo '15, Engineering (Olin), Louis Yee '15, Engineering (Olin), Shane Skikne '15, Engineering (Olin), Margo Sulmont '13, Architecture and Economics, Sophia Utset-Ward '15, Mechanical Engineering (Olin), Marie Watanabe '12, Economics, and Jeremy Woo '13, Electrical Engineering (Olin/National University of Singapore)
ADVISOR: *Caitrin Lynch, Anthropology (Olin)*

Engineering for Humanity, an interdisciplinary engineering design and anthropology course, is a semester-long partnership between Three-College students and the Councils on Aging in Needham and Wellesley. Each year, older community members are recruited to partner with students in a series of discovery, design, and community-building activities. Come hear Wellesley and Olin student presentations and see the 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 these 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 -- were accompanied by visits with our partners for feedback and continued learning and community building. Shortly after the Ruhlman conference, several volunteers will receive specific, custom-designed artifacts intended to solve particular problems.

This class is supported by the Metrowest Health Foundation and based at Olin College.

Social Sciences

Health, Wealth, and the Pursuit of Happiness (short talks) Pendleton Hall East 339

The Effect of Tort Reform on Cancer Treatment and Outcomes

Emily Cuddy '12, Economics

ADVISOR: *Kristin Butcher, Economics*

The CBO estimates that total expenditures on health care in the US will rise to nearly 50 percent of GDP by 2082. Accordingly, regardless of one's political leanings, eliminating wasteful health care spending is not only desirable but also—to the extent that the current trajectory is unsustainable—necessary. Recently, many politicians have espoused tort reform as a "safe" method of cutting health care costs because it reduces physicians' liability and, in turn, the probability of their practicing defensive medicine. But, is this true? Can tort reform lower costs without endangering patients? Two seminal studies, focusing on obstetrics and cardiology, suggest that, in some cases, tort reform may do just the opposite, i.e., raise treatment intensity without improving patient outcomes. My study examines its effect on the treatment of cancer, historically one of the most prevalent and costly to treat diseases in the US, between 1987 and 2000.

How do the Poor Use Informal Saving and Lending Mechanisms to Cope with Droughts? A Look into the Role of ROSCAs in Ethiopia

Ypsse Kim '12, Economics

ADVISOR: *Gauri Shastri, Economics*

The recent drought in the Horn of Africa has drawn attention to the ability or inability of the poor to cope with unpredictable negative shocks to their income. Many formal financial methods of smoothing consumption are not compatible with the needs of the poor living in rural, developing areas. I study how the poor adjust their informal saving and borrowing behavior in response to negative income shocks. Specifically, what role does Rotating Savings and Credit Associations (ROSCAs), also known as "the poor man's bank," play in helping smooth consumption?

Is More Always Better? Mortgages, Debt, and Social Class

Morgan Johnstonbaugh '14, Economics and Sociology

ADVISOR: *Allison Tracy, Wellesley Centers for Women*

The 2008 mortgage crisis was a harsh wakeup call to a mortgage market that had turned into a financial nightmare. Individuals across the U.S. bought homes that they could not afford and they sacrificed their financial security by depleting their assets and increasing their debt. This study is focused on establishing these trends. The National Longitudinal Study of Adolescent Health provides a nationally representative sample of participants in four stages. The most recent stage was collected in 2008 at what time participants were ages 24–32 and provided information on social, economic, and physical wellbeing. By documenting factors such as mortgage, income and debt, economic wellbeing plays a central role in the understanding of the financial decisions that lead to the mortgage crisis. (Research supported by the Linda Coyne Lloyd Student Research Internship.)

The Effect of Health Care Reform on Retirement: Evidence from Massachusetts

Gauri Subramani '12, Economics and English

ADVISOR: *Courtney Coile, Economics*

Access to health insurance may influence individuals' lives beyond just their access to health care. Most of the non-elderly population in the U.S. receives their health insurance through an employer, which may make it difficult for employees to switch jobs or leave the labor force. The recently enacted national health care reform law may change this by providing easier, more affordable access to alternative health insurance options. In this study, I explore the effect of the very similar 2006 Massachusetts health care reform on labor force transitions. This study can shed light on the potential impact of the national law, providing context to the conversation about health reform in the U.S.

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