



2006

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**Seventh Annual**  
**Colby Undergraduate Research Symposium**

Keynote Speaker

## Dr. Robert D. Bullard

### Sociologist and Author

Dr. Robert Bullard will give the keynote address for the symposium at **7:30 pm** on **Wednesday, May 3, 2006** in **Olin 1**.

### Environmental Justice for All

Round-the-clock images of the human toll of Hurricane Katrina forced long-ignored issues of race and class into America's living rooms – and brought Robert Bullard's decades-long struggle for environmental justice to the forefront. The Colby community will hear about Dr. Bullard's struggle on May 3, 2006 in his keynote presentation for the Undergraduate Research Symposium, "Environmental Justice for All."

A sociology professor at Clark Atlanta University, Bullard is the founder of the school's Environmental Justice Resource Center and the author of twelve books, from 1990's *Dumping in Dixie: Race, Class, and Environmental Quality* to the recently published anthology *The Quest for Environmental Justice: Human Rights and the Politics of Pollution*. His eyes were first opened to environmental discrimination in 1978, when he helped his attorney wife collect data for a lawsuit against a company that had sited a landfill in an African-American Houston community. "We found that every one of the city-owned landfills was located in a predominantly black neighborhood," he says, "even though blacks made up a quarter of the population."

To Bullard, environmental justice is "the notion that everybody has a right to a clean, safe, healthy environment and that no community should become the dumping ground for other people's waste." It's a belief few environmentalists – or Americans in general – would quarrel with, but too few have acted upon.



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## Research Symposium

# Colby Undergraduate Research Symposium 2006

**May 3-5, Colby College, Waterville, Maine**

**Keynote Address - Dr. Robert D. Bullard  
May 3, 7:30 pm Olin 1**

## Research Presentations

**Wednesday, May 3**

### **SESSION I: ENVIRONMENTAL STUDIES Conservation Biology Presentations**

**11:00 - 11:50**

**Olin 234  
Session Chair:  
Russ Cole**

[Liza Mitchell](#) ('08), [Katie Renwick](#) ('07) and [Jeff Carroll](#) ('08), Conservation Biology Presentations

Gray Wolf Reintroduction in the Greater Yellowstone Area

### **SESSION II: ANTHROPOLOGY Senior Research in Anthropology**

**1:00-3:00 PM**

**Whitney Room  
Session Chair:  
Catherine Besteman**

- |                |   |
|----------------|---|
| <b>1:00 pm</b> | <u><a href="#">Jessica Moore</a></u> ('07), Anthropology<br>The Little White Lie That Could Save the World  |
| <b>1:15 pm</b> | <u><a href="#">Greyson Brooks</a></u> ('06), Anthropology<br>Sociocultural Degeneration and State Patronage of the Arts: Mapplethorpe, Cultural Crisis, and the NEA |
| <b>1:30 pm</b> | <u><a href="#">Chelsea Downs</a></u> ('06), Anthropology<br>Brand Management And The Wal-Mart Model   |
| <b>1:50 pm</b> | <u><a href="#">Jamie Manzer</a></u> ('06), Anthropology   |

- Unveiling Democracy: The Rhetorical and Ritualistic Disguises of Representation
- 2:05 pm**      **Lauren Simmons ('06)**, Anthropology  
A Leader's Place in Revolution: How One Individual Embodies the Many Voices of Dissent
- 2:20 pm**      **Jia-Ling Loo ('06)**, Anthropology  
The Culture of Open Source: Countering Hegemony in a Digital Economy

***SESSION III:  
General Session***

***Smith Room  
Session Chair:  
Clem Guthro***

***2:15-5:15 PM***

- 2:15 pm**      **Kara McCabe ('06)**, English  
A Journey Through Memory and Self in the Works of Edwidge Danticat and Julia Alvarez
- 2:30 pm**      **Gregory Lusk ('06)**, Philosophy  
Virtue Epistemology: Rethinking the Presuppositions of Knowledge
- 3:45 pm**      **George A. Williams ('06)**, Science, Technology, and Society  
Viewing the Human Body as Technology
- 4:15 pm**      **Jessica Varnum ('06)**, Government  
Catalyzing Change: Towards Accelerated and Expanded U.S.-EU-Russian Action to Reduce the Threat of Nuclear Terrorism
- 4:45 pm**      **Julie Jaenicke ('06)**, Mathematics  
Piero della Francesca: Geometry in Painting
- 5:00 pm**      **Jane Leary ('06)**, Mathematics  
Hypatia: the Original Woman Mathematician

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**Research Symposium**

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***Keynote Address - Dr. Robert D. Bullard  
May 3, 7:30 pm Olin 1***

## ***Research Presentations***

***Thursday, May 4***

### ***SESSION IV: ANTHROPOLOGY Gender Studies***

***11:00-12:15***

- |                 |  |
|-----------------|--|
| <b>11:00 am</b> | <b><u>Laura Snider</u> ('06)</b> , Anthropology<br>Travesti Rights are Human Rights  |
| <b>11:15 am</b> | <b><u>Stephanie Atwood</u> ('06)</b> , Anthropology<br>To Be a Good Italian Woman  |
| <b>11:30 am</b> | <b><u>Jamie Manzer</u> ('06)</b> , Anthropology<br>Denaturalizing Sex Binaries: Professional Women Officials Transgressing Gender Boundaries |
| <b>11:45 am</b> | <b><u>Jane Lee</u> ('06)</b> , Anthropology<br>Status and Gender in Korea  |

***Whitney Room  
Session Chair:  
Mary Beth Mills***

### ***SESSION V: RELIGIOUS STUDIES Religion and World War II***

***11:00 - 12:15***

**Robert Rosenbaum ('07)**  
The Third Reich Church  
**Ryan Ahearn ('07)**

***Lovejoy 344  
Session Chair:  
Debra Campbell***

The Khalsa in World War II

**Jen McAleer ('07)**

Resistance in the Nazi Government and Army

## **SESSION VI: BIOLOGY** **Cell Cycle and Cancer**

1:00 PM

**Olin 234**  
**Session Chair:**  
**Paul Greenwood**

**Erin Schlossman ('07)**

Ewing's Sarcoma and Possible Gene Therapies Involving EWS/FLI-1 and CD99

**Alexander White ('07)**

The Genetics of Prostate Cancer

**Carolyn Litty ('06)**

Mantle Cell Lymphoma: Incidence, Biological Features, and Treatments

**Peter Steinour ('07)**

*Glioblastoma multiforme*: Hope for Pacification

**Nichol Penna ('06)**

Synovial Cell Sarcoma: Diagnosis, Therapy, and Case Study

## **SESSION VII:** **General Session**

1:00-3:30 PM

**Smith Room**  
**Session Chair:**  
**Mark Serdjenian**

1:00 pm

**Sara Booth ('06)**

Human Trafficking, Immigration, and Prostitution in Italy

1:45 pm

**Adil D'Sousa ('06)**

The Family Novel in the Emerging Nation-State: A Comparative Study of Ba Jin's Jia and Lev Tolstoy's Anna Karenina

2:15 pm

**Hye Kim ('08)**

Was Handel a Plagiarist?

2:30 pm

**Jonathan Bastian ('06)**

Logical Liberation: Perspectives from the East and West

3:00 pm

**Kathryn Lidington ('06)**

Variation in Beach Profiles and Sediment Characteristics at Popham Beach, Phippsburg, ME

3:15 pm

**Elizabeth Mollo-Christensen ('06)**

Potential Effects of Deep-Ocean Carbon Dioxide Sequestration on Foraminifera

## **SESSION VIII: EAST ASIAN STUDIES** **Research in Japanese Fiction**

1:00-3:00 PM

**Hurd Room**  
**Session Chair:**  
**Tamae Prindle**

1:00 pm

**Morgan Manoff ('08)**, East-Asian Studies

The Confessional Hero of the 'Temple of the Golden Pavilion'

1:20 pm

**Liza Mitchell ('08)**, East-Asian Studies

Secrecy, Sexuality and the Covert Feminine Power in 'Masks'

1:40 pm

**James Luckenbill ('08)**, East-Asian Studies

Botchan's Transformation in Accordance with Justice

1:45 pm

**Katherine MacBain ('06)**, East-Asian Studies

- Reality and Liminal Space in Murakami Haruki's 'Dance Dance Dance'
- 2:00 pm**      **John Kester ('08)**, East-Asian Studies  
Silence in Silence: The Titular Significance of Shusako Endo's Novel
- 2:15 pm**      **Alexander Connors ('08)**, East-Asian Studies  
Narrative Structure in Kenzaburo Oë's A Personal Matter: Hierarchy of Chatman's Kernels and Satellites, Suspense and Surprise

**SESSION IX:  
General Session**

**Whitney Room  
Session Chair:  
Toni Katz**

**2:00-4:00 PM**

- 2:15 pm**      **Erin Rhoda ('06)**  
Let Us Now Praise Famous Women
- 2:45 pm**      **Erica Dorpalen ('06)**  
Carry Emptiness: The Ecology and Zen Buddhism of Gary Snyder's Poetry
- 3:00 pm**      **Christabel Kwabi ('06)**  
An Evaluation of the Ghanaian Education System
- 3:15 pm**      **Emily Brostek ('06)**  
The Kind of Person I Am: Reassessing the Aims of Community Service and Its Impact on College Students Through Identity Development

**SESSION X: ECONOMICS  
Advanced Topics in Environmental  
Economics**

**Miller 319  
Session Chair:  
Thomas  
Tietenberg**

**2:30 - 3:45 PM**

- Charles Reed ('06)**  
Insurance and the Management of Environmental Risk: The Case of Climate Change
- Emilia Tjernström ('06)**  
Co-management of Natural Resources: Evaluating the Concepts and Empirical Evidence from Protected Areas

**SESSION XI: AMERICAN STUDIES  
Honors Projects in American Studies**

**Hurd Room  
Session Chair:  
Margaret  
McFadden**

**3:15-5:45 PM**

- 3:00 pm**      **Kara Fagan ('06)**  
From Ball of Fire to Cattle Queen: Gender and Class in The Films of Barbara Stanwyck
- 3:15 pm**      **Emily Judem ('06)**  
Off the Tracks
- 3:45 pm**      **Katherine Hamm ('06)**  
Why Do Men Hate Ani DiFranco? The Connection Between Women Rock Musicians and the Image of Feminism
- 4:00 pm**      **Christina Terrell ('06)**  
The Racialization of Female Body Image Perception in the United States

**4:15 pm****Jairus Steed ('06)**

Blue-eyed Soul in the 21st Century: African-American Influence on Popular American Music

**SESSION XII: ECONOMICS  
Research in Economics****Smith Room****4:00-5:30****4:00 pm****Alexandra Funk ('06)**, Economics

The Adequacy of Health Care Services for the Elderly in China

**4:20 pm****Michael Poplaski ('07)**, Economics

Econometrically Modelling Alumni Giving to Colby and Other NESAC Schools

**4:40 pm****Brian Tierney ('06)**, Economics

Religion and Happiness among China's Oldest-Old

**5:00 pm****Jonathan Wong ('06)**, Economics

Analyzing the Determinants of Obesity in Maine

**SESSION XIII: HISTORY  
New Studies in American and European  
History: Senior Honors Theses****Whitney Room  
Session Chair:  
Paul Josephson****4:00-6:00 PM****4:00 pm****Jonathan Ashcroft ('06)**, History

British and French Intelligence on the ♦German Question♦ and the Growth of Pacifist Movements

**4:20 pm****Timothy Stenovec ('06)**, History

The Taking of Mayflower Hill: the Vietnam Antiwar Movement at Colby College

**4:40 pm****Julia Malkin ('06)**, History

From Private Protest to Public Philosophy: The Democratic Society of Pennsylvania and the Election of 1800

**5:00 pm****Courtney Kubilis ('06)**, History

Space Age Learning: Education Reform in the USSR and USA in the Age of Sputnik

**5:20 pm****Katie Fuller ('06)**, History

Spinners and Losers: Lewiston's Irish and French-Canadian Immigrants 1850-1930

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**Research Symposium**

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***May 3-5, Colby College, Waterville, Maine***

***Keynote Address - Dr. Robert D. Bullard  
May 3, 7:30 pm Olin 1***

## ***Research Presentations***

### ***Friday, May 5***

#### ***SESSION XIV: SCIENCE, TECHNOLOGY, AND SOCIETY***

##### ***Science, Technology and Society Studies***

***9:30-11:30 AM***

***Smith Room  
Session Chair:  
Paul Josephson***

- |                 |  |
|-----------------|--|
| <b>10:00 am</b> | <b><u>Aaron Bradford</u> ('07)</b><br>Video Games and Social Anxiety: A Historical Approach to the Fear of Youth         |
| <b>10:15 am</b> | <b><u>Madeline Horwitz</u> ('06)</b><br>Man-Made Menopause   |
| <b>10:45 am</b> | <b><u>Jakob Moe</u> ('06)</b><br>From Hatcheries to Aquaculture: A Technical Solution to a Tragedy in the United States? |
| <b>11:15 am</b> | <b><u>Ethan Payne</u> ('06)</b><br>Big Ideas, Big Technology and the Founding of Las Vegas 1905-1935                     |

#### ***SESSION XV: AMERICAN STUDIES Honors Projects in American Studies***

***10:00-12:00 PM***

***Hurd Room  
Session Chair:  
Margaret  
McFadden***

- |                 |                                 |
|-----------------|---------------------------------|
| <b>10:00 am</b> | <b><u>Tyler Hales</u> ('06)</b> |
|-----------------|---------------------------------|

- Is Baseball Still America's National Pastime, or has Football Become the All-American Sport?
- 10:30 am**     **Noah Balazs ('06)**  
iDentity: Constructing Identity in a Mass Mediated and Postmodern Society
- 11:00 am**     **Anna Erdheim ('06)**  
Exploring Opportunity in America: Immigrant Entrepreneurship and Rags to Riches Success
- 11:30 am**     **Chelsea Downs ('06)**  
The Economics of Hip Hop Culture -- More Than Music

**SESSION XVI: ENVIRONMENTAL STUDIES**  
**Conservation Biology Presentations**

**Olin 234**  
**Session Chair:**  
**Russ Cole**

**11:00 - 11:50 AM**

**Sharon McMonagle ('06), Jenna Morrison ('06) and Alaina Clark ('08),**  
Conservation Biology Presentations  
Effects of Climate change on Coral Reef Ecosystems

**SESSION XVII: EAST ASIAN STUDIES**  
**Research in Asia**

**Smith Room**  
**Session Chair:**  
**Peter Ditmanson**

**12:30-3:00 PM**

- 12:45 pm**     **Lijah Barasz ('06),** East-Asian Studies  
The Effect of American Film on Chinese Youth Culture
- 1:00 pm**     **Michael Deheeger ('07) and O. Orantes ('07),** Government  
'Long-Neck': Purgatory on the Thai-Burma Border
- 1:30 pm**     **O. Orantes ('07),** History  
Glimpses of Hope, Laughter, and Sadness: Stories from Burmese Women Refugees in Thailand
- 2:00 pm**     **Lauren Brown ('06),** History  
Sars in Taiwan: Effects on Public Health and Treatment of Infectious Disease
- 2:30 pm**     **B. Tjernstrom ('06),** Economics  
Nomad's Land - Parks Protection in Mongolia: Structural and Human Obstacles

**SESSION XVIII: ENVIRONMENTAL STUDIES**  
**Environmental Studies Honors Research**

**Hurd Room**  
**Session Chair:**  
**Philip Nyhus**

**1:00-4:00 PM**

- 1:00 pm**     **B. Tjernstrom ('06)**  
Be the Change You Wish to See: National Attitudes and Climate Change Policy
- 2:00 pm**     **Alexandra Jospe ('06)**  
Modeling Spatially Explicit Human-wildlife Conflict: GIS and Moose-vehicle Collisions in Maine
- 2:30 pm**     **Hilary Langer ('06)**  
The Cost of Conservation: Payments for Environmental Services on The Osa Peninsula, Costa Rica
- 3:00 pm**     **Sarah Kelly ('06)**  
Energy Use Patterns and Potential Areas for Energy Conservation in Dorm Rooms at Colby College

**3:30 pm**      **Jenna Morrison ('06)**  
Environmental Awareness of Waterville Junior High Students

**SESSION XIX:  
General Session**

**Whitney Room  
Session Chair:  
Yulia Chentsova**

**1:00-3:30 PM**

**1:00 pm**      **Gabrielle Adams ('06)**  
Time, Remorse, Compensation, and Reparations

**1:30 pm**      **Katharine Gilroy ('06)**  
MP and 6CI-tryptophan Administered to Attenuate Secondary Pathology in Guinea Pig Spinal Cord Injury

**2:00 pm**      **Kathryn Rooney ('06)**  
Specificity and Affective Valence of Autobiographical Memories in Depression

**2:30 pm**      **Steen Sehnert ('06)**  
Omission and Commission in the Inaction Inertia Paradigm

**3:00 pm**      **Laura Snider ('06)**  
Mobilized Mothers and Women Warriors: Women's Political Participation in Sri Lanka and Chile

**SESSION XX: BIOLOGY  
Honors Research in Biology**

**Olin Room 1  
Session Chair:  
Frank Fekete**

**1:00-4:00 PM**

**1:00 pm**      **David Civitello ('06)**  
Genetic Breeding System of Gray Fox, *Urocyon cinereoargenteus*, in a Protected Population

**1:30 pm**      **Patrick Lizotte ('06)**  
Genetic Variation Between Populations of the Rare Orchid *Isotria Medeoloides* and Implications for Conservation

**1:45 pm**      **Matthew Meredith ('06)**  
Concomitant Antibiotic and Mercury Resistance among Gastrointestinal Microflora of Feral Brook Trout, *Salvelinus fontinalis*

**2:15 pm**      **Erin Parry ('06)**  
Mercury Resistance in a Multi-Drug Resistant Strain of the Fish Pathogen, *Aeromonas salmonicida*

**2:45 pm**      **Matthew Aschaffenburg ('06)**  
The Impact of Trait-Mediated Effects on Predator-Prey Interactions in the Rocky Intertidal Community

**3:15 pm**      **Sarah Hoskinson ('06)**  
A Comparison of Forest Type Resilience to Structural and Compositional Changes Following Beech Bark Disease Infestation

**SESSION XXI: GEOLOGY  
Geoseminar**

**Mudd 218  
Session Chair:  
Robert Gastaldo**

**1:00 PM**

**B. Cantor ('08), C. Thompson ('08), D. Pace ('06), S. Reid ('08) and B. Aigler ('08)**

The Plastic Response of the Genus *Quercus* to Atmospheric pCO<sub>2</sub> Concentration**SESSION XXII: CHEMISTRY**  
**Senior Chemistry Presentations****Keyes 105**  
**Session Chair:**  
**Mark Juhasz****3:00 - 4:00 PM****Bram Geller ('06)**

The Synthesis Of New Oxacalixarenes and Bicyclooxacalixarenes from 1,8-Naphthyridine Precursors.

**Adelajda Zorba ('06)**Synthesis of 2-Oxo-16-(3', 4'-methylenedioxyphenyl)-trans-15-hexadecene, an Inhibitor of *M. tuberculosis*.**Zach Goldman ('06)**

The Synthesis of RCLMs

**SESSION XXIII: ECONOMICS**  
**Honors Projects in Economics****Smith Room****3:30-6:00 PM****3:30 pm**      **Jessica Minty ('06)**

Media Coverage and Disaster Relief

**4:15 pm**      **Caroline Theoharides ('06)**

The Role of Home Equity in Retirement Saving: Building Your Nest (Egg)

**SESSION XXIV: HISTORY**  
**History 435****Hurd Room**  
**Session Chair:**  
**Elizabeth Leonard****4:00-5:30 PM****4:15 pm**      **Anne Kearney ('08)**, History

Waging the War of Opinions: Northern and Southern Newspaper Coverage of Antietam

**4:30 pm**      **Nicole Lavery ('07)**, History

Maryland and Kentucky: How Abraham Lincoln Kept Each Loyal to the Union

**4:45 pm**      **Nathaniel Stone ('06)**, History

Ben Butler and the Woman Order: Hard War Diplomacy or Inhumane Treatment of the Citizens of New Orleans?

**5:00 pm**      **Benjamin Herbst ('08)**, History

Pre-Civil War Acts of Violence and their influence on the Civil War

**SESSION XXV: ART**  
**Art****Whitney Room**  
**Session Chair:**  
**Ankeney Weitz****3:45-5:30 PM****3:45 pm**      **James Thompson ('06)**, Art

Residential Environmental Design: 'A House for an Ecologist' Design Competition Entry

**4:15 pm**      **Caroline O'Connor ('06)**, Art

- 4:35 pm      Use of Devotional Art in the Public and Private Setting in Renaissance Italy  
**Tucker Burr ('06)**, Art  
Writing Styles of Modern Graffiti
- 4:55 pm      **Steven Weinberg ('06)**, Art  
The Newspaper Redesign Project
- 5:15 pm      **Courtney Page ('06)**, Art  
Exploration of Composition in Mixed Media: Fabric, Steel, and Magnets

***SESSION XXVI: GEOLOGY  
Geology Honors Presentations***

***SSW Alumni  
Center  
Session Chair:  
Robert Gastaldo***

***5:00 PM***

**Katherine Curtis ('06)**

A dynamic 3-D Model of the Seasonal Surface and Sub-surface Flow in the Belgrade Lakes Watershed, South-Central Maine

**Christopher Russoniello ('06)**

Quantification of Seasonal Groundwater Flux through the Southern Portion of the Serpentine Bog in South-Central Maine

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# ***Colby Undergraduate Research Symposium 2006***

***May 3-5, Colby College, Waterville, Maine***

***Keynote Address - Dr. Robert D. Bullard  
May 1, 7:30 pm Olin 1***

## ***Poster Sessions***

**PLEASE NOTE** - Posters will be set up before 12 noon on the day assigned and taken down between 5 and 6 PM on the same day. They will be on display for one day only. Posters will be attended by the authors from 12 noon to 2:00 p.m. on Thursday or Friday, May 4 and 5.

Posters with an ODD poster number in the list below (1, 3, 5, etc.) will be set up and attended on THURSDAY, May 4, from 12 noon to 2 p.m. Posters with an EVEN poster number (2, 4, 6, etc.) will be set up and attended on FRIDAY, May 5, from 12 noon to 2 p.m.

1. **Kali Abel ('07), Biology**  
Effects of Varying Light Cycles and Temperature on Activity Levels in Mediterranean Geckos: A Look Into Endogenous Clocks
2. **Lauren Baard ('08), Biology**  
Differential Habituation of Male *Betta splendens* to Qualitatively Different Stimuli
3. **Jonathan Ashcroft ('06), Biology**  
LPS and Environmental Stress as Factors that Affect Male Mate Selection in Mice
4. **Tara Bergin ('07), Biology**  
Predator Survival Tactics and Use of Habitat Cover in *Rana catesbeiana*
5. **Jonathan Ashcroft ('06), Biology**  
Antimicrobial Properties of Skin Secretions from the Mink Frog (*Rana septentrionalis*) on Endemic Bacteriological Isolates
6. **Rachel Carr ('06), Caroline Polgar ('06) and Jakob Moe ('06), Biology**  
The Impact of Land Use Patterns and Watershed Characteristics on China Lake, Kennebec County, ME

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### **Research Symposium**

7. **Kelly Bakulski ('07) and Jennifer Mizen ('08), Biology**  
Transmission of Frog Calls Through Different Habitats: A Test of the Environmental Selection Hypothesis
8. **Sharon McMonagle ('06) and Bethany Peck ('06), Biology**  
Lake Water Quality Analysis and Possible Remediation Techniques for China Lake, Kennebec County, Maine
9. **Daniel Breen ('06), Biology**  
Effects of Feeding Interval and Meal Size on the Specific Dynamic Action of the Cuban Tree Frog (*Osteopilus septentrionalis*)
10. **Colby Souders ('07), Biology**  
Responses to Playback Calls in a Brazilian Treefrog: *Scinax rizibilis*
11. **Sarah Clark ('08), JaeHee Yun ('08) and Justin Guay, Biology**  
The Isolation and Characterization of Multiply Antibiotic Resistant Strains of Fish Pathogenic *Flavobacterium* Species
12. **Aaron Bradford ('07), Chemistry**  
Effects of Carbamoylation from Anticancer Sulfonylhydrazines on Homologous Recombination DNA Repair
13. **Cadran Cowansage ('08), Biology**  
Screening of Microsatellites for Estimation of Selfing Rates in *Witheringia solanacea*
14. **Hui Kim ('06), Chemistry**  
Synthesis and Structure of Novel Polyphenylene Macrocyces
15. **Michael Fleming ('06), Biology**  
Do Brown Anoles, *Anolis sagrei*, Have Dear Enemies?
16. **Rami Zahran ('06), Chemistry**  
Epichlorohydrin Cross-Linking of Synthetic DNA Oligomers
17. **Michael Fleming ('06), Biology**  
Risk-Sensitive Foraging in Maine Woodland Rodents
18. **Anna Barnwell ('08), Courtney Larson ('08) and Ryan Scott ('07), Environmental Studies**  
Are Debt-for-Nature Swaps an Effective Conservation Strategy?
19. **Malcolm Itter ('07), Biology**  
An Observational Study of Cavity Nest Site Selection in Black-capped Chickadees (*Parus atricapillus*)
20. **Sandy Beauregard ('06), Jennifer Venezia ('06) and Scott Shahverdian ('06), Environmental Studies**  
Ecotourism in Developing Countries
21. **Spencer Koury ('06), Biology**  
Barbering: A Behavioral Expression of Dominance and Aggression In Caged Mice (*Mus musculus*)
22. **Caitlin Cleaver ('06), Caroline Polgar ('06), Liza Mitchell ('08) and Samuel Weeks ('06), Environmental Studies**  
Feasibility of the Reintroduction of Wolves (*Canis lupus lycaon*) in Maine: A GIS Study
23. **Spencer Koury ('06), Biology**  
Genetic Basis for Self Compatibility in *Witheringia solanacea* (Solanaceae)

24. **Sarah Kelly ('06) and Scott Shahverdian ('06), Environmental Studies**  
Solar Panel Modeling on Suitable Roofs at Colby
25. **Spencer Koury ('06), Biology**  
Efficient Energy Allocation in Foraging: A Two Model Study in the Role of Learning
26. **Hilary Langer ('06), Karen Prisby ('07) and Rachel Terry ('07), Environmental Studies**  
Prioritizing Land Purchases for the Belgrade Regional Conservation Alliance
27. **Meredith Lowmaster ('06), Biology**  
Influence of Body Size on Stress-Induced Color Change in the Green Anole (*Anolis carolinensis*)
28. **Sharon McMonagle ('06), Alaina Clark ('08) and Jenna Morrison ('06), Environmental Studies**  
The Effects of Climate Change on Coral Reef Ecosystems
29. **Amanda McGarry ('07), Biology**  
A Genomic Approach to Detecting Salinity-Mediated Zinc Transporter Regulation in the Euryhaline Green Crab, *Carcinus maenas*
30. **Alexander McPherson ('07), Environmental Studies**  
Developing a Model for Pedestrian Route Selection at Colby
31. **Jenny Mooney ('06), Andrew Johnson ('06), Ethan Payne ('06) and Virginia Raho ('07), Biology**  
Population Estimate of Deer Mice, *Peromyscus maniculatus*, in the Forest Types of Perkins Arboretum
32. **Bethany Peck ('06), Alexandra Jospe ('06) and Emily Sinnott ('08), Environmental Studies**  
The Effects of Climate Change on Polar Bears
33. **Erin Parry ('06) and Kimberly Mukerjee ('06), Biology**  
Mercury Resistance in a Multi-Drug Resistant Strain of the Fish Pathogen, *Aeromonas salmonicida*
34. **Katherine Renwick ('07), Charles Carroll ('08) and Liza Mitchell ('08), Environmental Studies**  
Gray Wolf Reintroduction in the Greater Yellowstone Area
35. **Rachel Terry ('07), Biology**  
The Effects of the Herbicide Atrazine on Male Fiddler Crab (*Uca* spp.) Territory Defence and Aggression
36. **Katherine Renwick ('07), Environmental Studies**  
A Spatial Analysis of Impervious Surfaces at Colby College in 1965 and 2006
37. **Rachel Terry ('07), Biology**  
Restraint Stress and Aggression in Familiar Mice (*Mus musculus*)
38. **Jacqueline Roller ('06), Environmental Studies**  
Spatial Analysis of Colby College Trails: Perkins Arboretum and Runnals Hill
39. **Tenzin Tsewang ('07), Biology**  
Overexpression and Purification of the Oat (*Avena fatua*) protein AFN1 and Construction of a pMAL/AFN1 expression plasmid
40. **Christopher Russoniello ('06), Gregory LaShoto ('07), Randa Capponi ('06) and Sharon McMonagle ('06), Environmental Studies**



## Estimating the Impact of Catastrophic Sea Level Rise in Maine

41. **Elizabeth Turner ('06), Emily McClure ('07) and Emily Mosites ('06), Biology**  
Isolation and Characterization of Mercury and Antibiotic Resistant Bacterial Strains from Atlantic Salmon, *Salmo salar*
42. **Kerry Whittaker ('08), Joel Alex ('08) and Sarah Hoskinson ('06), Environmental Studies**  
What is the Role of Seed Banks in Preserving Biodiversity?
43. **Natalie Wayne ('06), Biology**  
Preparation for Protein Expression Studies on the Wheat Grain PKABA1-Interacting Protein TaWD40
44. **Adam Atkinson-Lewis ('06), Geology**  
Prediction Surface Mapping and Analysis of Carbon Dioxide Flux and Surface Temperature and Comparison with Alteration Zones on Eldfell Volcano Cone, Iceland
45. **Victoria Work ('08) and Lee Kozakiewicz ('07), Biology**  
Microbial Mercury and Antibiotic Resistance in the Soil Systems of Avery Peak, Maine
46. **Lora Golann ('06), Geology**  
The Skeleton in Maine's Closet: Controversy Surrounding the Allagash Wilderness Waterway
47. **Courtney Zecher ('06), Biology**  
Pilot Analysis of Gray Fox, *Urocyon cinereoargenteus*, Major Histocompatibility Complex (MHC)
48. **Lindsay Masters ('06), Geology**  
Using Geochemical Alteration of Seafloor Basalts as a Proxy for Fluid Flux through the Ocean Crust
49. **Courtney Zecher ('06), Biology**  
Monitoring the Healing Time of Baitfish with Skin Ulcerations Using Fluorescein
50. **Theodore McDermott ('06), Geology**  
Analysis of Soil Potential for Future Development: Waterville and Oakland, Maine
51. **Aynara Chavez-Munoz ('09) and none DCE account, Chemistry**  
Expression and Purification of Human DNA Polymerase Beta as a Target for Anti-Cancer Sulfonylhydrazines
52. **Christopher Russoniello ('06), Geology**  
Seasonal Fluid Flux Through the Serpentine Bog, Belgrade Lakes Region, Maine
53. **Daniel Fowler ('06), Chemistry**  
Investigating the Mechanism of a Novel Ribosomal RNA Degradation Pathway
54. **Samuel Weeks ('06), Geology**  
Analysis and Interpretation of a Triassic-aged Reef Complex, Wallowa Terrane, Northeastern Oregon
55. **Katherine Curtis ('06), Geology**  
Using Historic Climatological Data to Determine the Hydrologic Seasons in a Small Watershed
56. **Garry Bertholf ('06), Music**  
If Lester Leapt Into Schenkerian Analysis
57. **John Goss ('06), Geology**  
Monitoring Surface Displacement of the Colby Green Retaining Pond Dams

58. **Gjergji Gagi ('07), Music**  
Form and Structure in Second Movements of Beethoven's Sonatas : A Schenkerian Analysis of the Adagio from Sonata Op.31 No.2 'Tempest'
59. **Chad Stecher ('08), Mathematics**  
Analysis of a Proxy of Suicidal Ideation in the Maine Youth Drug and Alcohol Use Survey/Youth Tobacco Survey
60. **Barbara Hough ('06), Music**  
Schenkerian Analysis of the Allegro Movement from Bach's Flute Sonata in E Major
61. **Gabrielle Adams ('06) and Steen Sehnert ('06), Psychology**  
Remorse and the Circumstances Surrounding Crime
62. **Stephen Planas ('06), Music**  
'A Schenkerian Analysis of Beethoven's Piano Sonata No. 8, 2nd Movement'
63. **Gabrielle Adams ('06), Psychology**  
Compensation in the Context of Reparations
64. **B. Pruitt ('06), Music**  
An die Musik
65. **Alan Chang ('06), Adam Rafsky ('06) and Christine Maloney ('07), Psychology**  
Vividness and The Dilution Effect
66. **Ryland Brooks ('07), Physics and Astronomy**  
Images and Spectra at Mid-Infrared Wavelengths of the High-Mass Star-Forming Complex W3
67. **Chelsea McCann ('07), Kristen Russell ('06) and Michael Dieffenbach ('07), Psychology**  
Ego Depletion, Control, and Their Effects on Intrinsic Motivation
68. **Lent Johnson ('07), Physics and Astronomy**  
Challenges in Radiative Transfer Modeling - W3 IRS5
69. **Jessica Seymour ('06) and Elizabeth Wyckoff ('06), Women, Gender, Sexuality**  
The Perceptions and Realities of Pornography on Colby College Campus
70. **Gillian Butsch ('06), Cassie Green ('06), Lauren Erickson ('06) and Melissa Crawford ('06), Psychology**  
Terror Management Theory and Belief in an Afterlife
72. **Benjamin Crane ('06) and Steen Sehnert ('06), Psychology**  
Up-Regulation and American Nationalism in Collegiate Athletes
74. **Cheryl Hahn ('08), Psychology**  
Gender Differences in the Effects of Social Context on Emotional Responding
76. **Margaret Jackson ('06), Daniel Osar ('06) and Kathryn Rooney ('06), Psychology**  
Upregulation of Sadness During Films: A Self-Report Analysis
78. **Marissa Meyer ('07), Danielle Preiss ('07), Katherine Lillehei ('07), Monica Phillips ('07) and Raven Adams ('08), Psychology**  
Evaluation of Immune Cell Infiltration After Spinal Cord Injury in the Guinea Pig
80. **Rebecca Reisman ('06) and Meredith Stauffer ('06), Psychology**  
Overconfidence After Exposure to Misleading Post-Event Information

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**2006 Program**

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**Research Symposium**

# ***Colby Undergraduate Research Symposium 2006***

***May 3-5, Colby College, Waterville, Maine***

***Keynote Address - Dr. Robert D. Bullard  
May 3, 7:30 pm Olin 1***

## ***Associated Sessions***

**Monday, Dec. 12, 2005**

***PHYSICS AND  
ASTRONOMY  
Physics Senior  
Seminar  
3:00 PM***

***Keyes 105  
Session Chair: Virginia Long***

**Devon Ducharme ('06) and Jon Bodansky ('06)**  
Muon Experiments

**Monday, March 13**

***PHYSICS AND  
ASTRONOMY  
Physics Senior  
Seminar  
3:00 PM***

***Keyes 105  
Session Chair: Robert Bluhm***

**Ken Thompson ('06)** Amplified Dye-Laser System for Atomic Experiments  
**Kristoff Paulson ('06)** Magnetic Reconnection Exhausts in the Solar Wind

<b>Mao Zheng ('06)</b>	Data Acquisition with LabView
<b>Drew Branden ('07)</b>	Construction of a Pulse Amplified Diode Laser System
<b>Nick Beaird ('06)</b>	Time-Domain Spectroscopy and Tensor Polarizabilities in Na Rydberg Atoms

## Monday, March 20

**PHYSICS AND  
ASTRONOMY  
Physics Senior  
Seminar**  
3:00 PM

**Keyes 105**  
**Session Chair: Robert Bluhm**

<b>Gene Kafka ('06)</b>	Alternative Theories of Gravity
<b>Juan Urruela ('06)</b>	Waste-to-Energy: Generating Electricity by Combusting Sugar-Cane Scrap (Bagasse)

## Monday, April 3

**PHYSICS AND  
ASTRONOMY  
Physics Senior  
Seminar**  
3:00 PM

**Keyes 105**  
**Session Chair: Robert Bluhm**

<b>Nick Stielau ('06)</b>	Magneto-Optical Atom Traps: Construction, Operation, and Applications
<b>Ryland Brooks ('07)</b>	Wonderful W3

## Wednesday, April 5

**ENGLISH  
English Honors  
Presentations**

**Session Chair: Laurie Osborne**

<b>Emilie Coulson ('06)</b>	Northern Door
<b>Emily Tull ('06)</b>	A Defense of Ted Hughes and his Decisions Concerning the Composition of Sylvia Plath's Ariel Through an In-Depth Look at the Major themes in her Writing and her Life
<b>Erica Dorpalen ('06)</b>	Carrying Emptiness: The Ecology and Zen Buddhism of Gary's Snyder's Poetry
<b>Elizabeth</b>	Ladies and Gentlemen, Boys and Girls. A Collection of Short

**Wyckoff ('06) Stories**

<b>Eleanor Thermansen ('06)</b>	Politics and Poetry: The Evolution of Adrienne Rich
<b>Ashley Jones-Pierce ('06)</b>	Land, Consciousness and Continuance: The Poetry of Simon J. Ortiz and Joy Harjo
<b>Erin Rhoda ('06)</b>	Beautiful Reckonings: Thought, Pain, and Complexity in John Keats's Letters and Poetry
<b>James McLaughlin ('06)</b>	The Travel Imagination and the Hybrid Reality in the Wake of Colonialism
<b>Melina Markos ('06)</b>	A Journey Through Memory and Self in the Works of Adwidge Danticat and Julia Alvarez
<b>Lauren Woodward ('06)</b>	The Human Heart in Conflict with Itself: The Modern and Postmodern Implications for Family and History's Effect on Individual Identity in Selected Works of William Faulkner
<b>Michael O'Brien ('06)</b>	The Case of Raging Bull: Homophobia and the Masculine Cinema of Martin Scorsese
<b>Samuel Stark ('06)</b>	Infinite Jest's Spectacular Resistance: Subversion and Hope in a Pluralizing Entertainment Culture
<b>Ryan Spanich ('06)</b>	Literary Love Making in Nicholas Sparks' Novels: Finding the Balance between the Writer's Life and the Writer's Work in Bestselling Romantic Literature
<b>Russell Gullette ('06)</b>	A Modernist Success in a Postmodern Failure: Jackson Pollock and Abstract Expressionism, The Avant-Garde and the Ascension of Late Capitalism, Art after 1943
<b>Rebeccah Amendola ('06)</b>	A League of Their Own: The Competition for Jewish-American Identity In the Novels of Philip Roth
<b>Marissa Chin ('06)</b>	The Virtues of Impurity: Exploring Repulsion in the Works of Samuel Beckett
<b>Kara McCabe ('06)</b>	A Journey Through Memory and Self in the Works of Adwidge Danticat and Julia Alvarez

**Friday, April 7**

**CHEMISTRY**  
**Senior Chemistry**  
**Presentations**

3:00 - 4:00 PM

**Keyes 105**  
**Session Chair: Mark Juhasz**

<b>Rami Zahran ('06)</b>	Epichlorohydrin Cross-Linking of Synthetic DNA Oligomers
<b>Rob Jacobs ('06)</b>	Measurement of 6-Thioguanine Base Pairing Stability Through Imino-Exchange Rate Determination
<b>Leah Weitz ('06)</b>	Inhibition of Prostaglandin D Synthase
<b>Lindsey Boyle ('06)</b>	An Examination of the Current Mechanism of Hydrogen Peroxide Production in Lake Water

**Monday, April 10**

**PHYSICS AND**  
**ASTRONOMY**

**Keyes 105**

**Physics Senior  
Seminar**  
3:00 PM

**Session Chair: Robert Bluhm**

**Frank Fung ('06)**

Vector Theory of Spontaneous Lorentz Violation

**Todd Dixon ('06)**

Effects of Pulse Amplitude on a Two-State Quantum Mechanical Phase

**Friday, April 14**

**CHEMISTRY  
Senior Chemistry  
Presentations**  
3:00 - 4:00 PM

**Keyes 105  
Session Chair: Mark Juhasz**

**Hui Kim ('06)**

Investigation of New Macrocycles with Orthogonal Aromatic Rings

**Harriet Egessa ('06)**

The Synthesis of Biphenylene Aromatic Macrocycles

**Christabel Kwabi ('06)**

Generation of Vinylcarbenes.

**Michelle Kim ('06)**

Synthesis and Investigation of Naphthyl-appended Copper (I) Complex

**Monday, April 17**

**PHYSICS AND  
ASTRONOMY  
Physics Senior  
Seminar**  
3:00 PM

**Keyes 105  
Session Chair: Robert Bluhm**

**Drew Branden ('07)**

Construction of a Pulse Amplified Diode Laser System

**Mao Zheng ('06)**

Data Acquisition with LabView

**Kristoff Paulson ('06)**

Magnetic Reconnection Exhausts in the Solar Wind

**Wednesday, April 19**

**MUSIC  
Music Honors  
Presentation**  
5:30 PM

**Pugh Center  
Session Chair: Paul Machlin**

**Garry J. Bertholf ('06)**

John Coltrane: Jazz Improvisation, Transcription, and Performance

## Friday, April 21

### **CHEMISTRY** **Senior Chemistry** **Presentations** 3:00 - 4:00 PM

**Keyes 105**  
**Session Chair: Mark Juhasz**

<b>Will Thompson ('06)</b>	Engineering Perspective in a Instrumental Design for Measurements of Ultra Low Level Light
<b>Riley Doyle ('07)</b>	Yeast Model for Loss of Chfr: Identification of Suppressor Mutants and Purification of Cdc123
<b>Aaron Bradford ('07)</b>	Carbamoylation Effects from Anticancer Sulfonylhydrazines on Homologous DNA Recombination in vitro
<b>Dan Fowler ('06)</b>	Investigating the Mechanisms of a Novel rRNA Quality Control System

## Wednesday, April 26

### **ENVIRONMENTAL STUDIES** **Conservation Biology** **Presentations** 11:00 - 11:50 AM

**Olin 234**  
**Session Chair: Russ Cole**

<b>Alex Jospe ('06), Emily Sinnott ('08) and Bethany Peck ('06), Environmental Studies</b>
The Effects of Climate Change on Polar Bears

### **MUSIC** **Music Honors** **Presentation** 4:30 PM

**Bixler 154**  
**Session Chair: Steve Saunders**

<b>Stephen Planas ('06)</b>
Performance Practices in Carl Maria von Weber's Overture to Oberon: A History of Recorded Performances

## Thursday, April 27

### **BIOLOGY** **Cell Cycle and Cancer** 1:00 PM

**Olin 234**  
**Session Chair: Paul Greenwood**

<b>Callie McDowell ('06)</b>	Breast Cancer and Latina Women
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<b>Adam Newman ('07)</b>	Hypoxia: A Major Regulatory Event in Tumor Growth
<b>Rachel Carr ('06)</b>	Properties Found Naturally in Edible Plants: Cancer Causes and Remedies
<b>Kathryn Barus ('06)</b>	Incidence, Diagnosis, and Treatment of Melanoma
<b>Luke L'Heureux ('06)</b>	Smoking Under the Sun: Good, Bad, or ♦Reasonably Risky?

**ENGLISH**  
**Green Romanticism**  
**11:30 - 1:00**

**Fairchild Room, Dana Dining Hall**  
**Session Chair: Tilar Mazzeo**

**Kate Zeigler ('06), Liz Wyckoff ('06) and Holly Eydenberg ('06), English**  
Constructing Wildness: Environmentalism and the Implications of Garden Design History

**Christine O'Brien ('07) and Amy Weinfurter ('08), English**  
Environmental Apocalypse from Romanticism to Global Warming

**John DeBruicker ('07), Kerry Whittaker ('08), Steve Frechette ('08) and Liz Clark ('08), English**  
Pantheism and NeoPaganism in Environmental History

**Julie Wilson ('08), Adrian Walther ('06), Ryan Scott ('07) and Yvonne Baker ('08), English**  
Public Landscapes: From the Inclosure Acts to National Parks

**Jess Bernhard ('07), Kaitlyn Gangl ('07), Caitlin Blodget ('07) and Sheehan Lunt ('07), English**  
Representing Botany and the Symbolism of Plant Species

**Casey Turmelle ('07), Del Webster ('07), Laura Williamson ('07) and Dan Vassallo ('07), English**  
The Camera: Images of the Landscape

**Matt McPherson ('06), Matt Crane ('07), Ellen London ('09) and Conor Sullivan ('06), English**  
The Politics and Economics of Meat Production and Vegetarianism

**Friday, April 28**

**ENVIRONMENTAL STUDIES**  
**Conservation Biology Presentations**  
**11:00 - 11:50 AM**

**Olin 234**  
**Session Chair: Russ Cole**

**Courtney Larson ('08), Anna Barnwell ('08) and Ryan Scott ('06), Environmental Studies**  
Are Debt-for-Nature Swaps an Effective Conservation Strategy?

**RUSSIAN**  
**Russian Student Research Symposium**  
**1:30 - 5:00 PM**

**Whitney Room, Roberts**  
**Session Chair: Julie de Sherbinin**

**This symposium included presentations in Russian from Bates, Bowdoin, Colby, and the University of Southern**

**Maine students representing advanced independent work in literary and cultural studies. The Colby titles are listed in English translation below.**

<b>Adil D'Sousa ('06)</b>	Madness in Victor Pelevin's Novel <i>Chapaev and Emptiness</i>
<b>Cassandra Newell ('08)</b>	The Subtext of Mandelstam's Poetry in Shalamov's Labor Camp Story <i>Sherry Brandy</i>
<b>Todd Lohsen ('06)</b>	Prince Andrey Bolkonsky and His Search for Place in Tolstoy's <i>War and Peace</i>
<b>Ka Ye Chan ('06)</b>	The Russian Soul: The Rhythm of Natasha Rostova's Life in Tolstoy's <i>War and Peace</i>

**CHEMISTRY**  
**Senior Chemistry**  
**Presentations**  
**3:00 - 4:00 PM**

**Keyes 105**  
**Session Chair: Mark Juhasz**

<b>Natalie Wayne ('06)</b>	Preparation for Protein Expression Studies of the Wheat Grain PKABA1-Interacting Protein TaWD40.
<b>Hillary Easter ('06)</b>	Determination of Bioavailable Fe(III) in Natural Waters Using the Iron-Specific Ligand DFB.
<b>Adam Oesterle ('06)</b>	Using Chemiluminescence to Detect Phosphorus in Freshwater Systems
<b>Colby Burns ('06)</b>	Synthesis and Characterization of a Copper-Arene Complex

**Monday, May 1**

**ENVIRONMENTAL STUDIES**  
**Conservation Biology**  
**Presentations**  
**11:00 - 11:50 AM**

**Olin 234**  
**Session Chair: Russ Cole**

**Sandy Beauregard ('06), Scott Shahverdian ('06) and Jenny Venezia ('06), Environmental Studies**  
 Ecotourism in the Developing World

**PHYSICS AND ASTRONOMY**  
**Physics Senior Seminar**

**Keyes 105**  
**Session Chair: Robert Bluhm**

**3:00 PM**

**Alex Kozen ('06) and Josh Montague ('06)**  
 Low-Temperature and Magnetic Field Dependence of Ni(II) Compounds

**COMPUTER SCIENCE**  
**Computer Science Presentations**  
**4:00 - 5:00 PM**

**Mudd 405**  
**Session Chair: Dale Skrien**

**Nick Stielau ('06)** Interactive Databases for Everyday Use: the PHP and MySQL  
Outing Club Member Database

**Matt DeLoria ('06)** Developing a J2EE Task Management System

## Tuesday, May 2

### **RELIGIOUS STUDIES** **Religion and World** **War II**

11:00 - 12:15

**Lovejoy 344**  
**Session Chair: Debra Campbell**

**Megan Watts ('08)** The Spirituality Behind The Sound of Music: Maria Augusta Trapp

**Ryan Connolly ('07)** Edith Stern: Transformation

**Randine Horibe ('07)** Nisei: A Homeless Generation

### **ANTHROPOLOGY** **Anthropology of** **Gender and** **Sexuality**

11:00 - 12:15

**Lovejoy 307**  
**Session Chair: Mary Beth Mills**

**Chelsea Downs ('06)** Sex on the Internet: New Technologies of Sexual Consumption

**Lauren Erickson ('06)** Gender Identity Disorder: An Anthropological Approach to Diagnostic Categories

**Valerie Friedman ('07)** The Power of an Image: The Flapper

### **RELIGIOUS STUDIES** **Religion and World** **War II**

11:00 - 12:15

**Lovejoy 344**  
**Session Chair: Debra Campbell**

**Megan Watts ('08)** The Spirituality Behind *The Sound of Music*: Maria Augusta Trapp

**Ryan Connolly ('07)** Edith Stern: Transformation

**Randine Horibe ('07)** The 442nd Regiment

### **PHILOSOPHY** **Philosophy Honors** **Presentations**

**Lovejoy 215**  
**Session Chair: Cheshire Calhoun**

4:00 - 5:30 PM

**Emily Brostek ('06)** The Impoverishment of Philosophy

**Greg Lusk ('06)** Knowledge, Understanding, and Virtue Epistemology

## Wednesday, May 3

### **ENVIRONMENTAL STUDIES** **Conservation Biology Presentations**

11:00 - 11:50

**Katie Renwick ('07), Jeff Carroll ('08) and Liza Mitchell ('08),**  
**Environmental Studies**

Gray Wolf Reintroduction in the Greater Yellowstone Area

**Olin 234**  
**Session Chair: Russ Cole**

## Thursday, May 4

### **RELIGIOUS STUDIES** **Religion and World War II**

11:00 - 12:15

**Jen McAleer ('07)** Resistance in the Nazi Government and Army

**Robert Rosenbaum ('07)** The Third Reich Church

**Ryan Ahearn ('07)** The Khalsa in World War II

**Lovejoy 344**  
**Session Chair: Debra Campbell**

### **BIOLOGY** **Cell Cycle and Cancer**

1:00 PM

**Peter Steinour ('07)** *Glioblastoma multiforme*: Hope for Pacification

**Nichol Penna ('06)** Synovial Cell Sarcoma: Diagnosis, Therapy, and Case Study

**Alexander White ('07)** The Genetics of Prostate Cancer

**Erin Schlossman ('07)** Ewing's Sarcoma and Possible Gene Therapies Involving EWS/FLI-1 and CD99

**Carolyn Litty ('06)** Mantle Cell Lymphoma: Incidence, Biological Features, and Treatments

**Olin 234**  
**Session Chair: Paul Greenwood**

**ECONOMICS**  
**Advanced Topics in**  
**Environmental**  
**Economics**  
**2:30 - 3:45 PM**

**Miller 319**  
**Session Chair: Thomas Tietenberg**

**Emilia**  
**Tjernström**  
**('06)**

Co-management of Natural Resources: Evaluating the Concepts and Empirical Evidence from Protected Areas

**Charles Reed**  
**('06)**

Insurance and the Management of Environmental Risk: The Case of Climate Change

**Friday, May 5**

**ENVIRONMENTAL**  
**STUDIES**  
**Conservation**  
**Biology**  
**Presentations**  
**11:00 - 11:50 AM**

**Olin 234**  
**Session Chair: Russ Cole**

**Sharon McMonagle ('06), Alaina Clark ('08) and Jenna Morrison ('06),**  
**Environmental Studies**  
 Effects of Climate change on Coral Reef Ecosystems

**GEOLOGY**  
**Geoseminar**  
**1:00 PM**

**Mudd 218**  
**Session Chair: Robert Gastaldo**

**C. Thompson ('08), B. Aigler ('08), S. Reid ('08), D. Pace ('06) and B.**  
**Cantor ('08)**  
 The Plastic Response of the Genus *Quercus* to Atmospheric pCO<sub>2</sub> Concentration

**CHEMISTRY**  
**Senior Chemistry**  
**Presentations**

**Keyes 105**  
**Session Chair: Mark Juhasz**

**3:00 - 4:00 PM**

**Bram Geller**  
**('06)**

The Synthesis Of New Oxacalixarenes and Bicyclooxacalixarenes from 1,8-Naphthyridine Precursors.

**Adelajda**  
**Zorba ('06)**

Synthesis of 2-Oxo-16-(3', 4'-methylenedioxyphenyl)-trans-15-hexadecene, an Inhibitor of *M. tuberculosis*.

**Zach**  
**Goldman**  
**('06)**

The Synthesis of RCLMs

**GEOLOGY**  
**Geology Honors**  
**Presentations**  
**5:00 PM**

**SSW Alumni Center**  
**Session Chair: Robert Gastaldo**

**Katherine**

A dynamic 3-D Model of the Seasonal Surface and Sub-surface

**Curtis ('06)**  
**Christopher**  
**Russoniello**  
**('06)**

Flow in the Belgrade Lakes Watershed, South-Central Maine  
 Quantification of Seasonal Groundwater Flux through the  
 Southern Portion of the Serpentine Bog in South-Central Maine

## Monday, May 8

### **ENVIRONMENTAL STUDIES Environment and Society**

**Session Chair: Tom Tietenberg, Philip  
Nyhus, and Liliana Andonova**

**10:00 - 10:50 AM**

**Hurd Room**

**Cassie Jendzejec ('08), David Lee Russell ('08), Claire Y. Thompson ('08)  
and James R. Silvestro ('08)**

What Factors Affect Why Some African Countries Are More Affected by the  
HIV/AIDS Epidemic Than Others?

**Smith Room**

**Megan N. Schafer ('09), Morgan M. Davies ('08), Bryan J. Brown ('09)  
and Chelsea V. Eakin ('09)**

What Strategies Have Been Most Successful in Helping Urban Areas to Become  
Sustainable Communities?

**Whitney Room**

**Katherine T. Klepinski ('08), Patrick J. Roche ('09), Kelly M. McKone ('09)  
and Emily C. Jenkins ('09)**

Are Countries with High Level of External Debt More Likely to Experience Higher  
Rates of Natural Resource Degradation?

### **ENVIRONMENTAL STUDIES Conservation Biology Presentations**

**Olin 234**

**Session Chair: Russ Cole**

**11:00 - 11:50 AM**

**Joel Alex ('06), Sarah Hoskinson ('06) and Kerry Whittaker ('08),  
Environmental Studies**

How Effective are Seed Banks in Preserving Biodiversity?

### **PHYSICS AND ASTRONOMY Physics Senior Seminar**

**Keyes 105**

**Session Chair: Robert Bluhm**

**3:00 PM**

**Amit Gaiand ('06) and Dan Sack ('06)**

Thermodynamics of Waste Oil Combustion

### **COMPUTER SCIENCE Computer Science Presentations**

**Mudd 405**

**Session Chair: Dale Skrien**

**4:00 - 5:00 PM**

**Nicolas Mwai  
('06)**

Creating a Code-Snippet Wiki Repository

**Patrick  
Rodjito ('06)**

Position Tracking and Motion Prediction Using Fuzzy Logic

**EDUCATION AND  
HUMAN  
DEVELOPMENT  
Senior Seminar in  
Education and  
Human  
Development  
7:00 - 8:30 PM**

**Miller 8  
Session Chair: Mark Tappan**

**Chris Juraska ('06), Kristen Russell ('06), Elizabeth Ghilardi ('06), Katie Roberts ('06) and Josh Berman ('06)**

Albert Hall School Climate Study

**Colleen McGee ('06), Elizabeth Palten ('06), Elizabeth Shepherd ('06), Caitlin Peale ('06) and Lydia Joseph ('06)**

Girls Groups: From Adversaries to Allies

**Christabel Kwabi ('06), Emily Brostek ('06), Keegan Albaugh ('07), Gabe Adams ('06) and Emilie Slack ('06)**

The Colby Cares About Kids Program: A documentary

**Tuesday, May 9**

**BIOLOGY  
Advanced  
Immunology  
Presentations  
11:00 - 12:15**

**Olin 335  
Session Chair: Lynn Hannum**

**Lindsey Boyle ('06) and Darcy Taylor ('08)**

Evaluating Three Cell Lines for Calcein AM Retention in Cytotoxicity Assays

**Amanda McGarry ('07) and Chris Neil ('07)**

Phagocytosis of *E. coli* and Zymosan by Zebrafish Kidney Leukocytes

**Brian Ward ('08) and Emily Wagner ('08)**

Phagocytosis of Labeled *S. aureus* by Zebrafish Kidney Leukocytes

**ANTHROPOLOGY  
Anthropology of  
Gender and  
Sexuality  
11:00 - 12:15**

**Lovejoy 307  
Session Chair: Mary Beth Mills**

**Grey Brooks ('06)**

Hollywood and the Construction of Gay Male Identities

**Sarah Fallon ('06)**

The Role of Women in Post-1949 China

**Carolyn Deuschle ('07)**

Adding a Beat to the Queer Movement: Electrosex and its Effects for Change

**Mike Piancentini**

HIV/AIDS Prevention among Inner-City Populations

**Andrea Linney ('07)**

Women's Labor and China's Industrial Boom

**RELIGIOUS STUDIES**  
**Religion and World**  
**War II**

11:00 - 12:15

**Lovejoy 344**  
**Session Chair: Debra Campbell**

- Bobby Redwood ('06)** The Art of War: The Emotive Impact of World War II Propaganda Posters
- Brett Wagenheim ('09)** Bonhoeffer and Arendt
- Jess Wansart ('06)** The Initial Reception of Bonhoeffer's Theology

**ENVIRONMENTAL STUDIES**  
**GIS and Remote Sensing**

11:00 AM - 12:15 PM

**Keyes 103**  
**Session Chair: Philip Nyhus**

- Sharon McMonagle ('06), Randa Capponi ('06), Christopher Russoniello ('06) and Gregory LaShoto ('07)**  
 Estimating the Impact of Catastrophic Sea Level Rise in Maine
- Rachel Terry ('07), Karen Prisby ('07) and Hilary Langer ('06)**  
 Prioritizing Land Purchases for the Belgrade Regional Conservation Alliance

**BIOLOGY**  
**Neurobiology Presentations**

1:00 - 4:00 PM

**Olin 332**  
**Session Chair: Andrea Tilden**

- Cheryl Hahn ('08) and Will Cantley ('08)**  
 Electromagnetic Spectral Responsiveness in the Crustacean Visual System
- Sara Manoli ('07) and Jess Egan ('08)**  
 Electroretinographic Response to Various Visual Stimulus Patterns in Crustaceans
- Mike Butler ('08) and Geoffrey Buckle ('07)**  
 Environmental Copper Exposure: Effects on Thermal Sensitivity of the Cardiac Ganglion of Crustaceans
- Margaret Jackson ('06) and Jenny Mooney ('06)**  
 Impact of Environmental pH Changes on the Neurological Cardiac Response of Crustaceans
- Jessica Taylor ('07), Lindsay Carlson ('07) and Lauren Baard ('08)**  
 Neurological Habituation to Visual Predatory Stimulus in Crustaceans
- Kris Dobie ('06) and John Swain ('08)**  
 Visual Sensory Modulation in Response to Conspecific Chemical Stress Cues in Crustaceans

**ECONOMICS**  
**Advanced Topics in Environmental Economics**

2:30 - 3:45 PM

**Miller 319**  
**Session Chair: Thomas Tietenberg**

- Jonathan Bodansky ('06)** NAFTA's Chapter 11: What is the Evidence?



**Max Nigrosh ('06)** Micro-Finance in Principle and Practice

## Wednesday, May 10

### **ENVIRONMENTAL STUDIES**

#### **Environment and Society**

10:00 - 10:50 AM

**Session Chair: Tom Tietenberg, Philip Nyhus, and Liliana Andonova**

- |                     |   |
|---------------------|---|
| <b>Hurd Room</b>    | <b>Caitlin E. Dufraine ('09), Hannah D. Taska ('09), Lisa M. Portis ('09) and Kerry A. Whittaker ('08)</b><br>What are the Major Factors That Determine the Degradation of Coral Reefs or Their Sustainable Protection? |
| <b>Smith Room</b>   | <b>Amy Lu ('09), Katherine M. Butler ('09), Brian P. Lynch ('09) and Emily K. Stimpson ('09)</b><br>What States or Towns in the United States Have Been Most Successful at Composting and Why?                          |
| <b>Whitney Room</b> | <b>Sally E. Drescher ('09), Andrew M. Sherman ('09), Elizabeth J. Pfeffer ('09) and Brian W. Fulmer ('07)</b><br>What Specific Factors Have Had the Most Significant Restorative Impact on Fisheries?                   |

### **BIOLOGY**

#### **Molecular Ecology Project Presentations**

1:00 - 4:00 PM

**Olin 213**

**Session Chair: Stacey Lance**

**Rachel Terry ('07), Sarah Hoskinson ('06), Mike Fleming ('06), Matt Mitchell ('06), Julia Germaine ('07), Courtney Zecher ('06), Caitlin Rumrill ('08) and Andrew Johnson ('06)**

Using mtDNA to Assess Whether Color Polymorphisms in Southeastern Coyotes Are Due to Hybridization with Dogs and Analysis of Carnivore Distributions on Kennebec Land Trust Properties Using DNA from Non-invasively Collected Hair and Scat

### **BIOCHEMISTRY**

#### **Biochemistry of the Cell II Posters**

1:00 - 2:30 PM

**Olin Arcade**

**Session Chair: Paul Greenwood**

**Brian Rodriguez ('06) and Chris Neil ('07), Biochemistry**  
Gaucher's Disease

**Adam Newman ('07) and Bram Geller ('06), Biochemistry**  
Lesch-Nyhan Syndrome

**Christabel Kwabi ('06) and Adelajda Zorba ('06), Biochemistry**  
MELAS Syndrome

**Colby Burns ('06) and Kim Mukerjee ('06), Biochemistry**  
McArdle Disease

**Eric Bergh ('07) and Cedric Owens ('07), Biochemistry**  
Menkes Syndrome

**Matthew Wahl ('07) and Trevor Hanly ('07), Biochemistry**  
Morquio's Syndrome

**Aaron Bradford ('07), Riley Doyle ('07) and Metabolic Disorder Posters,**

**Biochemistry**  
 Porphyria

**BIOLOGY**  
**Neurobiology**  
**Presentations**  
 1:00 - 4:00 PM

**Olin 332**  
**Session Chair: Andrea Tilden**

**Andrew Cox ('08) and Dan Dewey-Mattia ('08)**

Crustacean Cardiac Sensitivity to Environmental Hypoxia and Digestive Activity

**Chelsea McCann ('07) and Monica Phillips ('07)**

Effects of Exogenous Serotonin on Agonistic Behaviors of Nondominant Crustaceans

**Kristine Robin ('08) and Sasha Bartels ('08)**

Electroretinographic Response of Crustaceans to a Predatory Visual Stimulus: Effects of Habituation

**Jaqueline Beaupre ('08) and Tim Miller ('08)**

Influence of Caffeine on the Neurocardiac System of Crustaceans

**Leigh Audin ('07) and Rob Zondervan ('07)**

Influence of Muscle Mass on Fatigue Rate in Crustaceans in Response to Stimulation of Motor Neurons

**Danielle Preiss ('07) and Paula Pelavin ('07)**

Response of the Crustacean Cardiac Ganglion to Exposure of Nicotinic Acetylcholine Receptors to Nicotine

**Sarah Belden ('06) and Kaitlin Adams ('06)**

The Influence of Ethanol on the GABA-induced Cardioinhibitory Response of Crustaceans

**ENVIRONMENTAL**  
**STUDIES**  
**Climate Change**  
**Politics**  
 2:30 - 3:45 PM

**Olin 234**  
**Session Chair: Liliana Andonova**

**Jennifer Venezia ('06), William Tyson ('09), Nicole Terrillion ('08) and Bethann Swartz ('06)**

Climate Change Politics

**Andrew Sherman ('09), Eric Hansen ('08), Karen Bennett ('06), Kathleen Maynard ('09), Kristin Blodgett ('06), Mariah Hudnut ('07), Renzo Mendoza Castro ('07), Sharon McMonagle ('06), Aime Schwartz ('08) and Alexandra Jospe ('06)**

Climate Cooperation Beyond 2012

**COMPUTER SCIENCE**  
**CS Fest**  
 3:00 - 5:00 PM

**Mudd 415/416**  
**Session Chair: Dale Skrien**

**Nico Mwai ('06) and Taylor Snook ('07)**

All-Star Games Breakout

**Tim Monahan ('06) and Mark Gaudet ('08)**

Berlin Wall Breakout

**Computer Science Project Demos**

**Nicolas Mwai ('06)**

Creating a Code-Snippet Wiki Repository

**Matt DeLoria ('06)**

Developing a J2EE Task Management System

**Patrick Rodjito ('06)**

Position Tracking and Motion Prediction Using Fuzzy Logic

**Courtney Goodie ('07) and Tomas Vorobjov ('06)**

Harry Potter Breakout

**Tomas Vorobjov ('06), Taylor Snook ('07) and Courtney Goodie ('07)**

It's Prom Time

**Mark Gaudet ('08), Brian Putnam ('08), Peter Landwehr ('08) and Tom Goth ('07)**

Killer McDeathStrike

**Tom Goth ('07) and Brian Butnam**

Stewie's Revenge Breakout

**Trik Rodjito ('06) and Peter Landwehr ('08)**

Sultry Eyes Breakout

**Thursday, May 9****ENVIRONMENTAL  
STUDIES****Environmental  
Health Determinants  
in the Local  
Community****7:00 PM****Olin 1****Session Chair: Gail Carlson****Dan Breen ('06) and Jackie Lauber ('09)**

Drinking Water Contaminants in Central Maine

**Alex Richards ('09) and Kristina Shiroka ('08)**

Human Health Impacts of Energy Use at Colby College

**Randa Capponi ('06) and Amy Weinfurter ('08)**

The Causes and Effects of Outdoor Air Pollution in Central Maine and The Health Impacts of Indoor Air Pollution in Maine

**Jenny Mooney ('06) and Bethany Peck ('06)**

The Hidden Nature of What You Eat: How Colby's Food Choices are Affecting You

**Katie Chamberlin ('06) and Sarah Ayres ('06)**

The Price of Beauty: A Look at Toxicants in Your Personal Products

**Jackie Roller ('06) and Cait Cleaver ('06)**

The implications of Pesticide Use within the Colby Community

**Aime Schwartz ('08) and Callie McDowell ('06)**

Tidiness &amp; Toxicity: An Examination of Cleaning Products and Household Chemicals at Colby College and Their Potential Health Impacts

**Beth Hirschhorn ('07) and Katie Himmelmann ('07)**

When Recycling Isn't Enough: The Hazards of Waste Management in Maine

**ENVIRONMENTAL  
STUDIES****GIS and Remote  
Sensing****11:00 AM - 12:15 PM****Keyes 103****Session Chair: Philip Nyhus****Alexander  
McPherson  
('07)**

Developing a Model for Pedestrian Route Selection at Colby

**Jacqueline  
Roller ('06)**

Spatial Analysis of Colby College Trails: Perkins Arboretum and Runnals Hill

**Katherine  
Renwick**

An Analysis of the Area Covered by Impervious Surfaces at Colby

('07)

**Caitlin Cleaver ('06), Samuel Weeks ('06), Liza Mitchell ('08) and Caroline Polgar ('06)**Feasibility of the Reintroduction of Wolves (*Canis lupus lycaon*) in Maine: A GIS Study**Scott Shahverdian ('06) and Sarah Kelly ('06)**

Solar Panel Modeling on Suitable Roofs at Colby

**RELIGIOUS STUDIES****Religion and World War II**

05/11/2006

**Lovejoy 344****Session Chair: Debra Campbell****Nani Phillips ('06)**

St. Christopher and the Spiritual Protection of the Soldier

**Bryan Sanders ('06)**

The US Response to Genocide: World War II and Darfur

**ANTHROPOLOGY****Anthropology of Gender and Sexuality**

11:00 - 12:15

**Lovejoy 307****Session Chair: Mary Beth Mills****Danielle Preiss ('07)**

Impotence, Fertility, and Prostitution: Hijras as a Third Gender

**Aya Costantino ('07)**

Changing Status of North American Berdache

**Nathan Downes ('06)**

Constructing Masculinity at the Workplace

**ENVIRONMENTAL STUDIES****Atlas of Maine Project**

1:00 - 4:00 PM

**Olin Arcade****Session Chair: Philip Nyhus****Sarah Kelly ('06)**

Aquifers and Wells of Maine

**Hilary H. Langer ('06)**

Primary Nesting Sites of the Piping Plover, Least Tern, Roseate Tern, and Bald Eagle

**Jackie Rolleri ('06)**

Lighthouses and Shipwrecks of Maine

**Karen Prisby ('07)**

Maine Public Water Supplies

**Katie Renwick ('07)**

Soil Types of Maine

**Greg LaShoto ('07)**

Shorebird Nesting Sites on the Maine Coast

**Randa Capponi ('06)**

Average Annual Wind Resource Potential in Maine

**Cait Cleaver ('06)**

Wetlands and Conservation Lands of Maine

<b>Caroline Polgar ('06)</b>	Atlantic Salmon Habitat on Maine's Rivers and Streams
<b>Rachel Terry ('07)</b>	Conservation Land and Human Presence Surrounding Roseate Tern, Lest Tern, and Piping Plover Nest Sites in Maine
<b>Sharon McMonagle ('06)</b>	Educational Opportunities and Average Income in Maine Towns
<b>Chris Russoniello ('06)</b>	Maine Ski Areas: Past and Present
<b>Sam Weeks ('06)</b>	Omes and Cahs: The Locations of Mainers and Their Roads
<b>Alex McPherson ('07)</b>	Emergency Resources in Maine
<b>Liza Mitchell ('08)</b>	Woodlot Ownership and Forest Cover in Maine

**BIOLOGY**  
**Cell Cycle and Cancer**

1:00 PM

**Olin 234**  
**Session Chair: Paul Greenwood**

<b>Meredith Lowmaster ('06)</b>	If You Had to Get Cancer ♦ What Makes Some Cancers Easier to Treat Than Others?
<b>Natalie Wayne ('06)</b>	Targeted Cancer Therapies
<b>Emily Pugach ('07)</b>	Immunotherapy as a Means of Treating Cancer
<b>Andrew O'Connell-Shevenell ('07)</b>	Complementary and Alternative Medicine: Cancer as a Door to Outside the Scientific Mind
<b>Tenzin Tsewang ('07)</b>	The Effects of Gender on Lung Cancer and Breast Cancer

**ECONOMICS**  
**Advanced Topics in Environmental Economics**

2:30 - 3:45 PM

**Miller 319**  
**Session Chair: Thomas Tietenberg**

<b>Jennifer Radcliffe ('06)</b>	An Ex Post Economic Evaluation of the Decision to Use Geothermal Energy in the New Alumni Center
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**PSYCHOLOGY**  
**Psychology Poster Presentation**

4:00 PM

**Robbins Room, Roberts**  
**Session Chair: Diane Winn**

<b>Johanna</b>	The Decision between Action and Inaction and the Inertia it May
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<b>Black ('06)</b>	Create
<b>Kate Gilroy ('06)</b>	Methylprednisolone and 6-Chlorotryptophan Administered to Attenuate Secondary Deficits of Spinal Cord Injury in Guinea Pigs
<b>Kristen Russell ('06)</b>	Deliberate Self-Harm: Risk Factors, Functions, and Implications
<b>Ben Crane ('06)</b>	A History of the Treatment of Schizophrenia by Family Therapy
<b>Alan Chang ('06)</b>	The Placebo Effect
<b>Lauren Olmsted ('06)</b>	Parental Influence on the Construction of Gender Schemas of Children
<b>Lauren Erickson ('06)</b>	Hypnotherapy as a Treatment for Cancer
<b>Steve Luke ('06)</b>	The Relationship between Multiple Sclerosis and Unemployment
<b>Ronny Bachrach ('06)</b>	Getting Older: A Diagnostic Comparison of Alzheimer's Disease and Semantic Dementia
<b>Melissa Crawford ('06)</b>	A Buddhist Approach to Psychotherapy: Using Mindfulness to Treat Generalized Anxiety Disorder
<b>Johanna Black ('06), Daniel Burke ('06) and Lauren Olmsted ('06)</b>	
How Age Influences Mood State Effects in the Deese-Roediger-McDermott Paradigm	
<b>Madeline Ragan ('08) and Stephen Luke ('06)</b>	
In Your Face! The Effect of Name Frequency on Creating a Feeling of Knowing State	
<b>Marissa Meyer ('07) and Katie Gilroy ('06)</b>	
Memory and Metamemory Accuracy for Visual Information: A Transfer Appropriate Processing Effect	
<b>Rebecca Reisman ('06) and Meredith Stauffer ('06)</b>	
Overconfidence After Exposure to Misleading Post-Event Information	

**ENVIRONMENTAL  
STUDIES**  
**Environment and  
Society**

7:00 - 7:50 PM

**Session Chair: Tom Tietenberg, Philip  
Nyhus, and Liliana Andonova**

<b>Lovejoy 202</b>	<b>Cantor, Bradford M. ('08), Daniel B. Wasserman ('09), ES118, Emma McLeavey-Weeder ('09), Environment and Society and Peter G. Raymond ('09)</b> What State Programs Are Most Effective in Promoting Energy Efficiency?
<b>Lovejoy 203</b>	<b>Benjamin S. Morse ('09), Caitlin G. Casey ('09), Samantha N. Given-Dennis ('09) and Megan C. Saunders ('09)</b> How Does a Nation's Involvement in International Organizations Affect Its Domestic Actions Towards Sustainability?
<b>Lovejoy 205</b>	<b>Rachel M. Freierman ('09), Nicholas J. Nassikas ('09), Nolan M. Collins ('09) and Nicholas J. Baranowski ('09)</b> What Role Does Local Participation and Decision-making Play in Terms of Wildlife Conservation Efforts?

**Friday, May 12**

**ENVIRONMENTAL**

**STUDIES  
Environment and  
Society**

10:00 - 10:50 AM

**Session Chair: Tom Tietenberg, Philip  
Nyhus, and Liliana Andonova**

<b>Hurd Room</b>	<b>Suzanne M. Merkelson ('09), Michael C. Ambrogi ('09), V. Alexandra Praggastis ('10) and Rebecca E. Lipson ('09)</b> Under What Conditions Can Foreign Aid Be Effective in Helping Countries Develop Sustainably?
<b>Smith Room</b>	<b>Tarini Manchanda ('09), Kristin B. Gates ('09), Linnea E. Rooke ('09) and Geoffrey T. Malick ('09)</b> What Are the Most Effective Methods Being Used by Drought-ridden Countries to Solve Their Water Crises?
<b>Whitney Room</b>	<b>Jennifer K. Burke ('09), Emily S. Kissner ('08), Meghan R. Kuhn ('08) and Eitan S. Green ('09)</b> What Conditions or Influences Seem Effective in Encouraging States or Countries to Turn to Renewable and Alternative Energy (Biodiesel, Wind, Etc.)?

**Saturday, May 13**

**AMERICAN STUDIES  
American Dreams  
Documentaries**

4:00 PM

**Given Auditorium  
Session Chair: Phyllis Mannocchi**

**Elizabeth Foxwell ('06), Dave Burtonperry ('06), Gillian Butsch ('06), Sarah Kelly ('06), Kendra King ('06) and Nate Werlin ('06), American Studies**

Controlled Chaos: A Documentary on the Maine Handicap Skiing Racers

**Rachel Carr ('06), Gregory Ortiz ('06), Lindsey Brewer ('06), Drew Rausch ('06), Andrew O'Connell-Shevenell ('07) and Juan Jung ('07), American Studies**

Dennis Dechaine

**Katie Packard ('06), Tara Bouton ('06), Marina Stakes ('06) and Sarah Burrows ('06), American Studies**

Waterville Rape Crisis Assistance and Prevention Center

**Allison Hertzberg, Kate Emery, Elizabeth Ghilardi, Emily Judem and Kara Fagan, American Studies**

Wooden Boat Building in Maine

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# ***Colby Undergraduate Research Symposium 2006***

## ***May 3-5, Colby College, Waterville, Maine***

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#### **EFFECTS OF VARYING LIGHT CYCLES AND TEMPERATURE ON ACTIVITY LEVELS IN MEDITERRANEAN GECKOS: A LOOK INTO ENDOGENOUS CLOCKS**

**Kali Abel ('07), Biology**

Endogenous clocks modulate most activities in animals. Light, seasons, temperature and age, are all cues that can change or initiate activity patterns. These rhythms, however, are different between species depending on adaptations to the surrounding environment. Sometimes these rhythms are flexible enough to track changes in that environment. Most humans, for example, are active during the day and asleep at night. Nocturnal species, however are asleep during the day and are most active at night. The different species-specific patterns may reflect different levels of predation, temperature, or environmental fluctuation. Sometimes these rhythms are so hard-wired that outside factors do not cause the rhythms of the endogenous clock to change. In this experiment I tested the hypothesis that activity patterns, specifically foraging patterns, in Mediterranean geckos are an example of a hard-wire and inflexible endogenous clock. I used nocturnal Mediterranean geckos which have a circadian rhythm shown most clearly by feeding patterns. To observe activity patterns as they relate to an endogenous clock, I manipulated light and temperature conditions. This allowed me to see if these geckos maintain a feeding schedule even when environmental cues change. Results showed that geckos have a hard-wired endogenous clock and their activities are not effected even in the wake of reversed light and temperature schedules, and heavily manipulated temperature conditions.

#### **COMPENSATION IN THE CONTEXT OF REPARATIONS**

**Gabrielle Adams ('06), Psychology**

Researchers demonstrate through a series of studies that time can reduce the punishment inclinations and moral outrage of people asked to judge a situation in which a corporation takes land away from the native people. When asked to take the perspective of the parties involved in the case, judgments changed significantly. Participants were more likely to ask for harsher punishment when taking the perspective of the native people, and a less severe punishment when taking the perspective of the corporation, thus showing that perspective can mediate the effects of time. Expressions of remorse and compensation also change punishment inclinations, but also result in more guilt to be perceived in the part of the perpetrator. Implications and applications of these studies are discussed.

#### **REMORSE AND THE CIRCUMSTANCES SURROUNDING CRIME**

**Gabrielle Adams ('06) and Steen Sehnert ('06), Psychology**



**Symposium**

- **2004 Symposium**
- **2003 Symposium**

**Celebration of Scholarship Home****Research Symposium-Office Use Only****Research Symposium**

Can a perpetrator's expression of remorse for committing a moral wrong modify perceivers' assignments of punishment? Is this affected by the mitigating or aggravating circumstances surrounding the crime? This study manipulated expressions of remorse and the mitigating circumstances surrounding a crime to determine how these affect judges' responses. Eighty-six participants read one scenario about a man who stole money from another man. Different scenarios described a situation in which the perpetrator expressed remorse or did not, and one of three levels of surrounding circumstances: mitigating (e.g., a need for money for a daughter's operation motivated the crime), a control condition, and aggravating (e.g., the theft was from a person who needed the money for a daughter's operation). Main effects were found for both remorse and mitigating circumstances on both attributional judgments about the perpetrator and punishment assigned, suggesting that the effects of remorse and mitigation operate independently. Participants also reported the degree to which they were morally outraged by the theft. Moral outrage was reduced both when remorse was expressed and when mitigating circumstances existed for the theft, and was increased by aggravating circumstances. A covariance analysis suggested that moral outrage mediated punishments assigned, so, for instance, when the perpetrator expressed remorse, participants were less likely to be morally outraged, and in turn were less inclined to punish as harshly. These results suggest that the respondents were primarily motivated by a concern for assigning a just deserts punishment to the offending individual. This project was presented at the annual conference of the Society for Personality and Social Psychology in January 2006, Palm Springs, CA.

**TIME, REMORSE, COMPENSATION, AND REPARATIONS****Gabrielle Adams ('06), Psychology**

When might an expression of remorse or an act of compensation change punishment inclinations for a moral transgression? Does the amount of time since the crime occurred matter? These questions are investigated from a psychological standpoint. In 4 separate studies, participants were asked to give their opinions on a situation in which a company takes land away from the natives and uses it for their own gain. The amount of time, expressions of remorse, and acts of compensation were varied in between-subjects designs in this set of studies. Evidence for a perpetrator's dilemma was found, whereby when a perpetrator expresses remorse and/or compensates, he/she is seen as having admitted more guilt, but is also punished less. Statistically significant main effects were also found for other dependent measures, including punishment inclinations, moral outrage, extent of apology, intention of harm, and innocence. The implications of this study for court cases and reparations situations are discussed. Part of this study will be presented at the annual conference of the Association for Psychological Science in New York, May 2006.

**THE IMPACT OF TRAIT-MEDIATED EFFECTS ON PREDATOR-PREY INTERACTIONS IN THE ROCKY INTERTIDAL COMMUNITY****Matthew Aschaffenburg ('06), Biology**

Indirect interactions are one of many important factors that influence the structure of the rocky intertidal zone. There has been growing interest in trait-mediated indirect interactions recently, in which predator or competitor presence can influence the interaction between two other species, such as a prey species and its resource, by altering a trait of the prey species. This study examined the effect of the presence of two sympatric predatory crab species, two sympatric non-predatory species, and two allopatric predatory crab species on the feeding rate of an intertidal snail, *Thais lapillus*. Experimental mesocosms were created in which snails were given access to food, barnacles, with some treatments including the presence of a potential predator. Crabs were kept in perforated boxes, which allowed any chemical cues to be emitted into the tank, but kept the snails out of actual harm. *Thais lapillus* in the presence of sympatric predatory crabs consumed significantly fewer barnacles than snails exposed to non-predatory crabs, allopatric predatory crabs, or snails in the control mesocosm. There was no difference in barnacle consumption between snails treated with sympatric non-predatory crabs, allopatric predatory crab, or no crabs. Snails in the presence of sympatric predatory crabs consumed 39% of the barnacles in their tanks, while snails treated with non-predatory crabs and allopatric predatory crabs consumed 67% and 71% respectively. These results indicate that water-borne chemical cues from sympatric predators inhibit snail feeding and increase the time the snails take refuge within their shells. Water-borne chemical cues from sympatric non-predatory crabs and allopatric predatory crabs have no effect on feeding rate and refuge time.

**ANTIMICROBIAL PROPERTIES OF SKIN SECRETIONS FROM THE MINK FROG (*RANA SEPTENTRIONALIS*) ON ENDEMIC BACTERIOLOGICAL ISOLATES****Jonathan Ashcroft ('06), Biology**

Over the past few years, a number of peptides exhibiting antimicrobial properties have been

isolated from hundreds of species of amphibian. These peptides offer a nonspecific chemical defense system against a broad range of microbial agents that may exist in the amphibian's environment. Two peptides (Brevinin-2 and Temporin-15P6) were isolated from secretions of the Mink frog, *Rana septentrionalis*, and synthesized by the Peptide Synthesis Facility - Pittsburgh, PA. Numerous studies have run antimicrobial assays on laboratory standard isolates but have neglected the microbial species/strains that are endemic to the amphibian's natural habitat. Bacterial isolates collected from the Mink's habitat were plated on standard Brain Heart Infusion solid plating media plates and subjected to a disk diffusion assay using the two synthesized peptides at varying concentrations. Growth inhibition was observed for the majority of the indigenous bacterial isolates and a positive correlation between the zones of inhibition and peptide concentrations was noted. Using 16S ribosomal DNA sequencing techniques, several of the bacterial isolates have been identified, including *Serratia*, *Bacillus*, *Aeromonas*, *Bukhoderia*, and *Delftia*. Some of these genera are known to cause infectious diseases in humans. Hence, the bacterial growth inhibition observed by the *Rana* peptides could have possible applications as antimicrobial chemotherapeutic agents.

## **BRITISH AND FRENCH INTELLIGENCE ON THE GERMAN QUESTION AND THE GROWTH OF PACIFIST MOVEMENTS**

### **Jonathan Ashcroft ('06), History**

To ensure that the newly formed Weimar Republic did not rearm, Britain and France used their intelligence organizations to keep Germany under constant observation. As Germany began to circumvent conditions set forth in the Treaty of Versailles, this information, along with relative strength, productive capability, and general mood of Germany's populace was relayed to the governments of Britain and France. During the inter-war period, both French and British politicians interpreted the intelligence to formulate their policies with respect to the German Question, the aim of which was to keep Germany in a state of weakness while at the same time preclude armed revolts or a communist revolution in Germany. Public opinion was then carefully shaped and cultivated to support these policies via deliberate manipulation of the media. Numerous questions inevitably arise concerning how well informed both politicians and citizens were regarding Germany's slow but steady shift towards rearming and to what extent pacifist sentiments and protests influenced their response to this growing danger. The French and British intelligence communities obtained and reported, on the whole, fairly accurate information regarding the situation in Germany during the inter-war period yet the personal convictions and beliefs of politicians in both governments allowed their judgments, in regards to foreign policy, to be compromised. They actively, officially and unofficially, attempted to shape the press so as to fit their respective foreign policy towards Germany. Ultimately, political pressure exercised by pacifist groups hindered the ability of France and Britain to prepare adequately for German hostilities, the results of which would ultimately plunge Europe into the Second World War.

## **LPS AND ENVIRONMENTAL STRESS AS FACTORS THAT AFFECT MALE MATE SELECTION IN MICE**

### **Jonathan Ashcroft ('06), Biology**

Female mice have demonstrated a preference for males perceived to be healthier and therefore more fit than males exhibiting signs of illness. The purpose of this study was to examine how inducing males with infection-like symptoms and subjecting some of these males to additional environmental stress influences females mate choice. Females given a choice to associate with unmanipulated control males or with manipulated males spent significantly more time with the control males, thus supporting my hypothesis.

## **PREDICTION SURFACE MAPPING AND ANALYSIS OF CARBON DIOXIDE FLUX AND SURFACE TEMPERATURE AND COMPARISON WITH ALTERATION ZONES ON ELDFELL VOLCANO CONE, ICELAND**

### **Adam Atkinson-Lewis ('06), Geology**

Field measurements of carbon dioxide flux, temperature readings, and alteration mapping conducted on the volcano Eldfell of Heimaey, Iceland indicate continued activity in the cone of Eldfell since its initial and only eruption in 1973. The kriging analysis of this data within the GIS environment reveals a correlation between alteration, temperature, and CO<sub>2</sub> flux that can be used to infer fracture zones in the volcanic system and indicate areas of future activity. Prediction surfaces also specify a CO<sub>2</sub> flux of 1.736 Mg/day.

## **TO BE A GOOD ITALIAN WOMAN**

### **Stephanie Atwood ('06), Anthropology**

Italy, the country with the stereotypical image of the large family at the dinner table, is in the

midst of a birthrate decline. The trend over the past decade has been one in which Italian families are having, on average, one child. Seen as a crisis to some, a modern revolution to others, the question remains: what is the cause? As it turns out, many (both Italians and non) are looking directly to Italian women for the answer. Part of this stereotypical Italian image is one of woman as mother, wife, and caregiver. As a mother, she must have a special bond with her child. She must be overly concerned with her child's education and nutrition (among other things), as it is her duty to reproduce. This has been seen as a standard for many years in Italy, and has aided in the idea that reproduction and motherhood are the only jobs for women. But if more Italians are having less children, is the role of women changing? Or has it been changing for years?

### **DIFFERENTIAL HABITUATION OF MALE *BETTA SPLENDENS* TO QUALITATIVELY DIFFERENT STIMULI**

#### **Lauren Baard ('08), Biology**

Habituation is a learning mechanism that functions to decrease the amount of energy and attention focused on a certain stimuli. Male Siamese Fighting Fish, *Betta splendens*, are territorial animals that defend their territories using a number of aggressive displays. Male Bettas have previously shown the ability to habituate to the presence of a conspecific male when visually exposed to each other. Due to the costly nature of many of the male *Betta*'s displays, I hypothesized that male Bettas should differentially habituate to qualitatively different stimuli. I presented each of three groups of male *Betta splendens* with a different stimulus, each presenting a different level of interactivity. I predicted that the Bettas would be more likely to habituate to a less interactive stimulus than a more interactive one. No significant habituation was observed in any of the groups and no significant differences in latency to display or length of display between all three groups were observed. However, overall data trends suggest that habituation was indeed occurring and that the three different stimuli elicited different levels of display. The limited amount of visual exposure to the stimuli in this experiment might account for why results were insignificant.

### **TRANSMISSION OF FROG CALLS THROUGH DIFFERENT HABITATS: A TEST OF THE ENVIRONMENTAL SELECTION HYPOTHESIS**

#### **Kelly Bakulski ('07) and Jennifer Mizen ('08), Biology**

Acoustic signals are produced by male animals during reproductive activity primarily to facilitate mate attraction, and deterrence of male competitors. They must also be effectively transmitted through the environment to a receiver but are vulnerable to degradation (deterioration in call frequency) and attenuation (loss of call amplitude) as sound waves travel. The environmental selection hypothesis proposes that animals using acoustic communication should produce signals that are optimal for the environment in which they are used. In this study we tested the environmental selection hypothesis in a group of closely related treefrogs in the genus *Scinax* that call in a variety of habitats in the Atlantic Forest of Brazil. We measured degradation and attenuation of prerecorded advertisement calls from 10 different species broadcast through an open habitat, closed forest habitat, and over the surface of water. We also compared how well calls propagated when broadcast on the ground and from 1m off the ground. Call degradation was estimated using cross-correlation analysis, and was least when calls were broadcast in the forest from 1m off the ground. Calls from species that perch degraded most when broadcast on the ground while calls from species that typically call from the ground degraded most when broadcast 1m up. Calls broadcast over water and those broadcast in the forest above the ground experienced the least attenuation, but calls broadcast in the forest at ground level had the most attenuation. Results of this experiment, therefore, lend some support to the environmental selection hypothesis.

### **IDENTITY: CONSTRUCTING IDENTITY IN A MASS MEDIATED AND POSTMODERN SOCIETY**

#### **Noah Balazs ('06), American Studies**

There is something missing from our daily interactions with one another that we cannot put our fingers on. We do not interact with people in the way or at the frequency that we used to. At every turn, we are given the option to substitute mediated experiences for authentic experiences. We care less about real life and more about MTV's *The Real World*. We are caught in a reality where the representation had replaced the represented as the locus of meaning. For each of these reasons, it is harder than ever for Americans to construct coherent selves. This thesis explores what I conclude to be the three origins of the postmodern subject's crisis of identity: technology, an image saturated culture, and postmodernity. Each of the three aim to complicate the process of identity construction but only when taken as a whole, as three parts of one force, do they catalyze the postmodern crisis of identity. With examples from video games, art, fast food restaurants, The Gulf War, the internet, reality television shows, iPods, BlackBerrys, the corporate job market, ATMs, bakeries, Tommy Hilfiger Co., and more I argue that it is often the things we take most for

granted that contribute most to the complication of identity construction. Finally, I propose a way out of the mediated reality that we so often experience and a way back to authentic selfhood.

## **THE EFFECT OF AMERICAN FILM ON CHINESE YOUTH CULTURE**

### **Lijah Barasz ('06), East-Asian Studies**

I will be presenting on the ways in which American cinema has affected Chinese youth culture. Based on interviews, observational research, and group discussions, I will argue that American cinema has encouraged Chinese college age youth to be more individualistic as the American value of the pursuit of personal happiness conflicts with the traditional Chinese value of responsibility to family. Further, I will discuss how the Chinese focus on standardized testing and academics as well as the availability and affordability of pirated films has increased the affect of American cinema on the college-aged generation.

## **ARE DEBT-FOR-NATURE SWAPS AN EFFECTIVE CONSERVATION STRATEGY?**

### **Anna Barnwell ('08), Courtney Larson ('08) and Ryan Scott ('07), Environmental Studies**

ARE DEBT-FOR-NATURE SWAPS AN EFFECTIVE CONSERVATION STRATEGY? Anna Barnwell, Courtney Larson, Ryan Scott Environmental Studies Program, Colby College, Waterville, ME 04901 Debt-for-nature swaps were conceived as a way to promote conservation efforts in developing countries, which have a high percentage of the world's biodiversity, through debt reduction. The swaps typically involve a partnership between an international NGO or foreign country, the government of the developing country, and a local NGO. Swaps have been implemented in many Latin American countries, several African countries, the Philippines, and Poland. A successful swap usually has support from local populations, puts emphasis on inputs instead of outputs, has some kind of enforcement mechanism, and gives most of the responsibility to the local NGO, not the government. Although in many cases the amount of debt cancelled by the swaps is negligible in comparison to the total foreign debt of the country, swaps have been largely effective in promoting conservation in nations that otherwise would not have the funds to do so. Recently, conservation programs in developing countries have been moving in the direction of poverty alleviation and inclusion of local peoples as a necessary condition for conservation of biodiversity.

## **LOGICAL LIBERATION: PERSPECTIVES FROM THE EAST AND WEST**

### **Jonathan Bastian ('06), Religious Studies**

For years, westerners have sought spiritual refuge in east and south east Asia. Religions like Buddhism have always filled an empty religious niche in countries like the United States. But exactly what makes a religion like Buddhism so appealing to a westerner? Or, what exactly is lacking in western culture that makes eastern religions so appealing? One important aspect that differentiates Buddhism from Christianity is the notion that Nirvana is attained through understanding philosophic principles. In other words, there is no leap of faith required in Buddhism. Therefore through understanding and embracing Buddhist philosophy, which is built upon logic and reason, one may attain liberation. But does such a system exist in a country like the United States? While the initial answer to this question is clearly no, I would like examine this idea and propose that logical liberation does indeed manifest itself in western philosophy, literature, and poetry. Specifically, I would like to consider the extent to which T.S Eliot, Seamus Heaney, and Martin Heidegger can be thought of as proposing paths to liberation built upon a similar set of principles found within Buddhist philosophy.

## **ECOTOURISM IN DEVELOPING COUNTRIES**

### **Sandy Beauregard ('06), Scott Shahverdian ('06) and Jennifer Venezia ('06), Environmental Studies**

Tourism is the world's largest industry due to its impact on GDP, employment, and global customer base. International tourism generates over 400 billion dollars annually. Nature-based tourism accounts for nearly 50% of this revenue. Improperly-managed tourism can be disruptive to local communities and degrade the environment. Ecotourism is a niche within nature-based tourism that is defined as travel to natural areas that conserves the environment and sustains the well-being of local people. This can be an alternative to conventional forms of development by utilizing the native ecological and cultural attractions in a sustainable manner. Successful ecotourism projects incorporate local citizens through employment, decision-making and profit-sharing. Vital aspects of ecotourism are the promotion of social and environmental standards, local government involvement, available funding, and the commitment made to meeting long-term conservation and development goals.

## **PREDATOR SURVIVAL TACTICS AND USE OF HABITAT COVER IN RANA CATESBEIANA**

**Tara Bergin ('07), Biology**

Predator-prey relationships are an important aspect of the natural world, and, because of its relevance to survival and natural selection, is an interesting relationship to study. In amphibian larvae, level of activity and landscape use are often what determines the survival as prey. I studied the anti-predator behavior of the North American bullfrog (*Rana catesbeiana*) tadpoles when presented with dragonfly (*Aeshna*) larvae, a known predator of tadpoles. Tadpoles were acclimated to four different habitats with varying degrees of habitat cover, and were transferred to a new habitat with a degree of cover equal to one of the acclimation tanks. A restrained predator, and thus its chemical cue, was introduced, and the behavior, particularly the use of the habitat cover to hide from the perceived risk of predation was observed. A significantly higher frequency of inactivity was found in tank I than in II and III, and inactivity followed a general trend of decreasing with increasing habitat cover. Difference in tank cover was not found to have a significant effect on swimming behavior, but did have a significant effect on hiding behavior, which increased with higher availability. Foraging decreased significantly with the addition of a predator, but did not vary significantly with different levels of cover. Hiding behavior and reducing conspicuous behaviors (like foraging) are probably the behaviors that afford the tadpole the most success at eluding a predator in their natural environment.

**IF LESTER LEAPT INTO SCHENKERIAN ANALYSIS****Garry Bertholf ('06), Music**

In my view, music theory pedagogy, up to this point, has (notwithstanding Roman numerical analyses) dealt with Western tonal music in strict literary contexts; using written words to explain or describe what the music is doing. Even the most literarily articulate and eloquent music theorists have not been able to elucidate the horizontal- and vertical dimensions of music simultaneously; these individuals have been incapable of illuminating a melody and its counterpoint at the same time. Music theorist and pedagogue Heinrich Schenker (1868-1935), recognized the challenges posed by trying to explain (or describe) Western music as such, and, as a result, developed a graphing system that attempted to fully meet these challenges. The efficacy of Schenkerian analysis lies in its ability to graphically delineate the salient features (and/or crux) of Western tonal music, i.e., the horizontal- and vertical dimensions of melody, harmony, and counterpoint. While Schenkerian theory is normally applied to the core Western European repertory, this poster/analytical sketch seeks to examine Lester Young's improvised solo on "Lester Leaps In" (Polygram 549082, 1939) through a Schenkerian lens.

**HUMAN TRAFFICKING, IMMIGRATION, AND PROSTITUTION IN ITALY****Sara Booth ('06), French/Italian**

A recent boom in human trafficking in women in Italy has generated a great deal of press and public hysteria. However, there have been few studies that attempt to distinguish the way in which depictions of immigration and human trafficking differ from the experiences of individual women. This study explores the complex relationships between national and international legislation, immigrants, victims of trafficking, the media, law enforcement, and the general public. The study is comprised of interviews with immigrants and locals, and legislative research conducted in the port city of Brindisi, Italy over a five month period. In most cases, media portrayals are either romanticized or exaggerated, creating an overwhelmed and thus fearful public opinion. The women themselves are rarely helpless victims when they make the decision to enter the country, but rather they become victimized by the lack of knowledge available to them upon arrival and, consequently, their fragile clandestine state. The study proves that the matter of prostitution among immigrant women requires both better investigation to create effective legislation and more careful representation in the media.

**EFFECTS OF CARBAMOYLATION FROM ANTICANCER SULFONYLHYDRAZINES ON HOMOLOGOUS RECOMBINATION DNA REPAIR****Aaron Bradford ('07), Chemistry**

Sulfonylhydrazines are a family of compounds with distinct anticancer activities. The combination of chloroethylating and carbamoylating activities of certain intermediates of several of the compounds cause synergistic inhibition of cancer at a cellular level, and the same products do not have as much toxicity as comparable chemotherapeutic agents that are currently available. While the chloroethylating species are understood to work at a DNA level by crosslinking DNA and making it harder to replicate, the other actions of the molecules are less understood. Carbamoylation targets mainly proteins, and can have any number of effects on many different proteins depending on where it attaches a molecule to them. This project involves researching the effects this carbamoylation has on proteins involved in homologous recombination, one of the DNA repair mechanisms that cancer cells overexpress. This research primarily uses strand-exchange reactions, reactions similar to homologous recombination but more easily reproduced and

quantified outside of cells.

## **VIDEO GAMES AND SOCIAL ANXIETY: A HISTORICAL APPROACH TO THE FEAR OF YOUTH**

### **Aaron Bradford ('07), Science, Technology, and Society**

Video games have and often controversial place in modern technological societies. While it is conceivable that video games have a physical affect on the brain and that has caused concern over whether video games can negatively affect children or teenagers, scientific findings on the subject vary greatly. By no means is this concern and anxiety only focused on video games, similar anxiety can be connected to movies, comic books, television, music and other cultural phenomena that are popular among youth. The anxiety over video games is just an extension of the fears previous generations have assigned to youth. It's when the debate is taken in a historical context, that the fear of youth culture has existed as long as freedom during youth has existed, that fearing the media outlets that youth prefer is an unfounded bias. In the end, trying to prevent youth from accessing violent or sexualized media is as futile as trying to stop them from playing games of 'cops and robbers' or 'cowboys and indians'.

## **EFFECTS OF FEEDING INTERVAL AND MEAL SIZE ON THE SPECIFIC DYNAMIC ACTION OF THE CUBAN TREE FROG (*OSTEOPILUS SEPTENTRIONALIS*)**

### **Daniel Breen ('06), Biology**

Specific dynamic action is the elevated metabolic rate experienced by animals after feeding. This metabolic flux is due to an increase in digestive organ activity during digestion and has been found to increase both with meal size and meal frequency in many vertebrates. The Cuban tree frog (*Osteopilus septentrionalis*) is a voracious predator whose diverse diet includes many insects and invertebrates. I predicted that Cuban tree frogs fed larger meals over longer intervals would experience a higher specific dynamic action than individuals fed smaller meals over shorter intervals. I also predicted that changes in oxygen consumption would become smaller as the frogs adjusted to a consistent meal size and between-meals interval. Over a four-week period, one group of Cuban tree frogs was fed one cricket every day, another group was fed three crickets every three days, and another group was fed ad libitum. Oxygen consumption rates were measured weekly and varied widely between treatments. A rigorous discussion of the results will be discussed.

## **IMAGES AND SPECTRA AT MID-INFRARED WAVELENGTHS OF THE HIGH-MASS STAR-FORMING COMPLEX W3**

### **Ryland Brooks ('07), Physics and Astronomy**

The region W3 is a massive star forming complex located in a large and active molecular cloud near the constellation Cassiopeia. In a relatively small area it contains numerous infrared sources, radio sources, various types of masers and both compact and ultra compact HII regions. Over January, I worked under Dr. Joseph Hora at the Harvard Smithsonian Center for Astrophysics, processing images and low resolution spectra of infrared sources in the region that he had taken in 2002 at the IRTF using the MIRS camera. The images and spectra were processed using the IRAF image processing package and the IDL development environment and have helped uncover new and exciting features of the region, such as previously unknown quantities of silicates.

## **SOCIOCULTURAL DEGENERATION AND STATE PATRONAGE OF THE ARTS: MAPPLETHORPE, CULTURAL CRISIS, AND THE NEA**

### **Greyson Brooks ('06), Anthropology**

My research explores how the United States federal government, through organizations and bureaucracies such as the National Endowment for the Arts, acts as a patron, with specific analysis of the past decade and a half since the 'art crisis' of the late 1980s and the social backlash against the art community in the 1990s in the form of fear of perceived degenerative arts as a corruption of American culture and values, including the role the state played in ameliorating the situation. I investigate how state patronage affects both the concepts behind and the manifestations of art, as well as who is encouraged, sanctioned, or neglected in the production of art. To accomplish this, I cover how the state defines and redefines morality and culture, and how does it express/allow the expressions of these through art.

## **◆THE KIND OF PERSON I AM:◆ REASSESSING THE AIMS OF COMMUNITY SERVICE AND ITS IMPACT ON COLLEGE STUDENTS THROUGH IDENTITY DEVELOPMENT**

### **Emily Brostek ('06), Education and Human Development**

As college students make the transition from adolescence to young adulthood they reach a crucial point in their identity development, for it is here that individuals begin to decide who they are and

what they will devote themselves to. The student who engages in community service projects during these critical years comes to see herself as the ♦kind of person♦ who cares enough to act and who is capable of having an impact. We argue that the kinds of identities that we observed students constructing are extremely important to the development of thoughtful moral agents and civically engaged individuals. In addition, this approach to service projects provides an useful way to conceive of the benefits available from service work. This theory is explicated through an examination of the Colby Cares About Kids mentoring program and its impact on mentors.

## **WRITING STYLES OF MODERN GRAFFITI**

### **Tucker Burr ('06), Art**

Graffiti is an act of breaking the rules. It is thus fitting that graffiti writers often deviate from the established rules of writing and calligraphy. However, many correlations can be drawn between urban graffiti writing and calligraphy, as urban graffiti utilizes a surprising amount of formal conventions and techniques of calligraphy and even typography. I will observe and compare the approaches taken, the tools and writing techniques employed, and finally the written results from urban graffiti and calligraphy. This study will consider this relationship by comparing the stylized signature tags of modern graffiti from around the world with past and present calligraphy and typography from Western, Chinese, and Arabic cultures.

## **TERROR MANAGEMENT THEORY AND BELIEF IN AN AFTERLIFE**

### **Gillian Butsch ('06), Melissa Crawford ('06), Lauren Erickson ('06) and Cassie Green ('06), Psychology**

The authors tested the hypotheses that, consistent with prior research on Terror Management Theory, participants whose mortality was made salient will show increased worldview defense in their ratings of a persuasive article♦s author and content. That is, they will rate an article consistent with their beliefs more positively and an article inconsistent with their beliefs more negatively than in a control condition. Additionally, for the first time in documented Terror Management Theory research, the authors pre-screened participants to determine whether or not they believed in some form of life after death. They predicted that those who believe in some form of an afterlife will show diminished effects of mortality salience since, theoretically, their belief in the afterlife is less terrifying and less anxiety-producing as it is perceived as a form of literal immortality. A marginally significant 3-way interaction was found between mortality salience, persuasive communication and a belief in the afterlife. When mortality was made salient, participants who believed in an afterlife considered the article that corresponded with their beliefs more truthful and valid than for those whom mortality was not made salient. The observed trend in the data suggests that with more power, there would have been a significant main effect for mortality salience. Further research would increase the number of participants in each condition and strengthen the mortality salience manipulation.

## **THE IMPACT OF LAND USE PATTERNS AND WATERSHED CHARACTERISTICS ON CHINA LAKE, KENNEBEC COUNTY, ME**

### **Rachel Carr ('06), Jakob Moe ('06) and Caroline Polgar ('06), Biology**

A comprehensive study of the China Lake watershed was conducted by the Colby Environmental Assessment Team during the fall of 2005. China Lake is a eutrophic lake that has water quality problems due to high levels of phosphorus and suffers from frequent algal blooms. GIS was an important tool in the analysis of the watershed land use patterns and physical characteristics. Historic and present land use patterns were determined from aerial photographs taken in 1965 and digital orthophoto quadrangles from 2003. Land use patterns, soil erosion, and slope were analyzed using ArcGIS. Models were then created to determine the erosion potential and the septic suitability within the watershed. Major changes in land use included an increase in residential and commercial land and a decrease in agricultural land. A residential survey was also conducted where buffer strips and roads were assessed and residences were counted and classified. There was very little buffer along the shore of China Lake, which contributed to the excess nutrients. Fire roads were also a major contributor to the phosphorus in the lake. Recommendations for removing phosphorus from the lake and reducing additional nutrients were made based on our analysis.

## **VIVIDNESS AND THE DILUTION EFFECT**

### **Alan Chang ('06), Christine Maloney ('07) and Adam Rafsky ('06), Psychology**

The purpose of the current study was to investigate the interaction, if any, between the dilution effect and vividly described information in a predictive task. To date, there has been no research linking these two phenomenon and their possible interactions, leading to the current research. Specifically, it was hypothesized that vivid diagnostic information would mitigate the dilution effect

when it was paired with non-vivid non-diagnostic information. A further aim was to investigate whether vivid non-diagnostic information would enhance the dilution effect when paired with non-vivid diagnostic information. The results showed differences ( $P = .05$ ,  $P = .03$ ) between vivid non-diagnostic information and non-vivid non-diagnostic information, as well as between absent non-diagnostic information and non-vivid non-diagnostic information respectively.

#### **EXPRESSION AND PURIFICATION OF HUMAN DNA POLYMERASE BETA AS A TARGET FOR ANTI-CANCER SULFONYLHYDRAZINES**

**Aynara Chavez-Munoz ('09) and none DCE account ('09), Chemistry**

The carbamoylating activity of Cloretazine, a novel anticancer sulfonylhydrazine prodrug, can modify cysteine thiols of cellular proteins and affect their activity. Another electrophilic species generated by Cloretazine has chloroethylating activity and is thought to generate the primary cytotoxic lesion, DNA alkylation and crosslinking. Among proteins potentially modified by carbamoylation, proteins of DNA metabolism are of particular interest, as carbamoylating and chloroethylating activities have synergistic cytotoxicity. The direct repair protein O-6 alkylguanine DNA-alkyltransferase (AGT) can repair the monoadduct created by Cloretazine, O-6 chloroethylguanine, and this activity is inhibited by carbamoylation. However, cultured neoplastic cells devoid of AGT are still susceptible to amplified cytotoxic effects of chloroethylating and carbamoylating compounds. Carmustine, a clinically useful nitrosourea that also generates chloroethylating and carbamoylating species in situ inhibits both DNA synthesis and end-joining activities. DNA polymerase-beta, specific to excision repair processes, would be required to repair alkylated DNA in the absence of AGT. The experiments proposed herein are designed to ascertain effects of carbamoylation on DNA polymerase-beta activity in vitro. In advance of these efforts, the protein is being over-expressed and purified from *E. coli*.

#### **GENETIC BREEDING SYSTEM OF GRAY FOX, *UROCYON CINEREOARGENTEUS*, IN A PROTECTED POPULATION**

**David Civitello ('06), Biology**

Mammalian carnivores are typically solitary. However, social living is common among the Canidae. The single mating pair, sometimes accompanied by nonbreeding helpers, is thought to be the fundamental unit of canid social structure but groups can be strongly sex-biased in composition. Body size and foraging behavior are thought to contribute to the interspecific variation in social structure. Gray fox, *Urocyon cinereoargenteus*, which range from southern Maine through Central America, are basal among canid species and therefore may represent an important evolutionary step toward more complex social systems. 126 foxes, including 23 pups in eight litters, were genotyped at 7 polymorphic microsatellite loci in order to determine the incidence of multiple paternity and to identify the father. I combined exclusion and likelihood paternity testing with relatedness analysis of littermates to accurately assess paternity status. I found unambiguous multiple paternity in one litter and likely multiple paternity in another. I estimate that multiple paternity occurs in at least 20% of litters. Females may seek multiple fertilizations in order to increase the genetic variability among offspring. This type of mate choice can interact with body size constraints and foraging behavior to influence evolutionarily stable mating and dispersal strategies of males and other aspects of the social system.

#### **THE ISOLATION AND CHARACTERIZATION OF MULTIPLY ANTIBIOTIC RESISTANT STRAINS OF FISH PATHOGENIC *FLAVOBACTERIUM* SPECIES**

**Sarah Clark ('08), Justin Guay ('08) and JaeHee Yun ('08), Biology**

Since the development of the first antibiotics in the 1940s, there has been widespread overuse in both clinical and agricultural applications. Antibiotic resistance has become a significant problem as a result of subsequent dissemination of antibiotics into the environment, and multiply-resistant strains of bacteria are now a major pathogenic threat. In this study eight separate strains of *Flavobacterium* responsible for recent disease outbreaks in fish hatcheries throughout Maine were collected and analyzed. All eight strains were found to be resistant to high levels of a number of different antibiotics, including those used for aquaculture as well as human chemotherapeutic applications. *Flavobacterium* isolates were also shown phenotypically to transfer antibiotic resistance determinants using a conjugation mating system in which *Flavobacterium* was the donor and *Escherichia coli* DH5-alpha was the recipient. This experiment suggests that it may be possible for *Flavobacterium* strains to transfer their multiple antibiotic resistance determinants to human pathogenic bacterial strains. Importantly, none of the hatcheries from which the *Flavobacterium* isolates were obtained had ever used antibiotics to treat their fish stock. It is possible that there is another selective agent responsible for the development of antibiotic resistance in the absence of antibiotic pressure. Mercury is one possible candidate, as all of the strains tested were resistant to mercuric chloride and it is known that genes encoding antibiotic resistance can be carried on the same mobile genetic elements that encode for mercury resistance. Preliminary data also suggest



that the majority of the *Flavobacterium* isolates contain genes for mercuric ion reduction, which would confirm the mercury resistance genotype.

### **FEASIBILITY OF THE REINTRODUCTION OF WOLVES (*CANIS LUPUS LYCAON*) IN MAINE: A GIS STUDY**

**Caitlin Cleaver ('06), Liza Mitchell ('08), Caroline Polgar ('06) and Samuel Weeks ('06), Environmental Studies**

The eastern timber wolf (*Canis lupus lycaon*) once inhabited Maine, as well as the rest of the eastern United States and southern Canada. As a result of human land use and widespread extermination campaigns, wolf numbers dramatically decreased, and by the early twentieth century, no wolves remained in Maine. As large carnivorous and territorial mammals, wolves require contiguous undeveloped areas with abundant prey. This project is a feasibility study that identifies the areas in Maine that are suitable for the reintroduction of wolves. We used GIS modeling to identify contiguous forested areas over 1,000 km<sup>2</sup>, calculate road and population density, and map the presence or absence of prey throughout the state. These variables were combined in a habitat suitability model to determine the location and amount of suitable wolf habitat in Maine. The northwestern part of the state appears most suitable for wolf reintroduction as it relatively undeveloped with low road and population densities. There is also a smaller isolated area in Washington county that might be suitable, but further investigation is required.

### **NARRATIVE STRUCTURE IN KENZABURO OË'S A PERSONAL MATTER: HIERARCHY OF CHATMAN'S KERNELS AND SATELLITES, SUSPENSE AND SURPRISE**

**Alexander Connors ('08), East-Asian Studies**

This paper attempts to view Ooe Kenzaburo's *A Personal Matter* through Seymour Chatman's narrative structure, kernels and satellites. The novel is thus seen to be constructed with its protagonist's choices as the cruxes of narrative path, and intermediary happenings acting to anticipate and recall such choices. The result of this choice-centric layout is a unified sequence of events and the shadows of those events, which must end in the death of the protagonist's child. This narrative structure is reinforced by the author's debunking of more forgiving narrative architecture, such as that of Jorge Luis Borges's *The Garden of Forking Paths*; such alternatives would otherwise treat the authority of protagonist choice as less finalistic. The novel's ending surprises, however, and offers some difficulty to Chatman's model. If the satellites (the intermediary, often anticipatory, happenings) act to foreshadow the certain end for Kenzaburo's protagonist, the structure breaks down in the book's last pages. The end overwhelming foreshadowed does not come about. However, viewing these past choices and recollections as existent in the protagonist's mind (rather than simply occurring on the passing pages), we can see one such past event to move him, to decide his final action.

### **SCREENING OF MICROSATELLITES FOR ESTIMATION OF SELFING RATES IN *WITHERINGIA SOLANACEA***

**Cadran Cowansage ('08), Biology**

The evolutionary transition from outcrossing to self-fertilization in flowering plants is important, yet incompletely understood. The Costa Rican shrub *Witheringia solanacea* provides a valuable opportunity to study this transition because it possesses both self-incompatible (SI) and self-compatible individuals (SC), and thus is in the midst of such a transition. The rate at which SC individuals actually self-fertilize is an important parameter in models predicting the evolution of SC. The assembly of a microsatellite library allowed for primers to be designed and used as a tool to compare the varying number of repeats in parent and progeny plants at specific loci. By collecting data on the genetic differences between offspring and parent plants we hope to estimate the selfing rate of SC individuals and understand the genetic and ecological factors that contribute to self-fertilization.

### **UP-REGULATION AND AMERICAN NATIONALISM IN COLLEGIATE ATHLETES**

**Benjamin Crane ('06) and Steen Sehnert ('06), Psychology**

When people are instructed to try and feel less emotion, they are successful. The literature on emotion regulation has been enriched with a large body of work conducted by James Gross and his students showing the effects of this down-regulation (Gross, 1997, 1998, 1999, 2002). In order to determine whether subjects can instead feel more emotion when instructed to do so, we presented 18 participants with a clip from the film 'Miracle' and instructed half of the participants to try and feel more emotion while watching the clip. We hypothesize that participants in the up-regulation condition will report higher levels of emotion, and we expect the most common method of

accomplishing this will be the reappraising of their emotional situation while watching the film.

### **USING HISTORIC CLIMATOLOGICAL DATA TO DETERMINE THE HYDROLOGIC SEASONS IN A SMALL WATERSHED**

**Katherine Curtis ('06), Geology**

We are in the process of creating a comprehensive numerical model of the seasonal hydrogeochemical dynamics of the Belgrade Lakes Watershed in Central Maine. Understanding hydrologic seasons is critical to watershed modeling because changes in the seasons define the dynamics of the inputs and outputs to the system. Since seasons are so pronounced in Maine, annual averages of climatological parameters would inadequately represent the hydrological dynamics of the system. We have evaluated historic climatological data and defined six distinct hydrologic seasons for the Belgrade Lakes Watershed. Daily mean temperature, precipitation, snowfall, and snow depth from a 25-year period (1975-1999) were analyzed. Potential evapotranspiration was calculated using Mather's equation and snow storage and melt was examined. Runoff from the watershed was determined by constructing unit hydrographs for the Messalonskee Stream, the outflow of the Belgrade Lakes Watershed, using gauged streams in the area. Six hydrologic seasons were determined and include: a cold season where the ground is mostly covered in snow (Dec-Feb); a rapid snowmelt season (Mar); a high runoff season (Apr); a transition season (May-Jun); a hot, high potential evapotranspiration season (Jul-Aug); and a second transition season (Sept-Nov). The methods by which these seasons were defined and the application of these seasons to the numerical model of the Belgrade Lakes Watershed will be presented.

### **THE FAMILY NOVEL IN THE EMERGING NATION-STATE: A COMPARATIVE STUDY OF BA JIN'S JIA AND LEV TOLSTOY'S ANNA KARENINA**

**Adil D'Sousa ('06), East-Asian Studies**

Ba Jin's Jia and Lev Tolstoy's Anna Karenina introduce two striking aspects of the family in literature: the theory of the family; and the nexus between the family and the state. In terms of a theory of the family as an institution, both authors follow, relatively speaking, a similar narrative (based upon family interactions, power relationships, the family in the context of society, retreating from society, etc.) but end up with vastly different sensibilities of a new world. Tolstoy advocates for a return to a glorious Russian past while Ba Jin envisions a new and freshly positioned China. Their differing views of progress and of the family's place in society are undoubtedly shaped by their experience of history. Russia in the late nineteenth century and China in the early twentieth century are the sites for political and social discussions about, among other things, the phenomenon of nationhood. Both societies are moving from a traditional-state where the family plays a central political role to a nation-state where the family plays a peripheral, apolitical, and often problematic role. In other words, the changing orientation between the individual, the family unit, and the state forms the context within which Ba Jin and Tolstoy theorise about the family.

### **'LONG-NECK': PURGATORY ON THE THAI-BURMA BORDER**

**Michael Deheeger ('07) and O. Orantes ('07), Government**

Huay Pu Keng, a village of Kayan refugees from Burma, is a half-hour drive from the Thai town of Mae Hong Son along the Thai-Burma border. Many Kayan are among the hundreds of thousands of refugees who have fled genocide, systematic rape, slavery and pillaging at the hands of the Burmese army. Kayan women are famous for the brass rings they wear around their necks; these have earned them the name 'long-neck' for the area's ethnotourism industry. This 'tourist appeal' provoked the Thai authorities to allow them a chance for life outside of the refugee camps to which their less 'exotic' compatriots are confined, though a few members of other groups have also established themselves in the village. It has not, however, granted them freedom to travel or hold a job. They find themselves caught between oppression by Burma's military junta, the State Peace and Development Council (SPDC) and a systematic denial of their human rights by the Thai government. The villagers of Huay Pu Keng have been on the same riverside hill for fourteen years. Over the course of last summer, we captured 35 hours of interviews and way too much footage of life in this border purgatory. Villagers recounted their experiences at the hands of the Burmese army and Thai police, the hardships they endured during their exodus from Burma, and the life they remember back home. They also shared their opinions of the thousands of tourists who have made their way against the dusty main road, and what hopes they hold for a future which has only become more uncertain. The editing process has only just begun, but a small sample will be selected in time for the presentation.

### **CARRY EMPTINESS: THE ECOLOGY AND ZEN BUDDHISM OF GARY SNYDER'S POETRY**

**Erica Dorpalen ('06), English**

Gary Snyder is a self-proclaimed spokesperson of the wilderness, a poet, lecturer, and essayist who grew up in rural areas of the Pacific Northwest, became a scholar of Zen Buddhism in Japan and is recognized as a leading activist of the environmentalist movement. Snyder's poetry interweaves Zen Buddhist philosophy and deep ecology with a shared vision of respect for the natural world, emphasizing the capacity of humankind to live consciously and reverently within nature's infrastructure. This project draws from the themes of his environmentalist's social agenda in highlighting the ways in which the language of his poetry tends to refrain from overt judgment, concentrating on the experience of place and the awareness of the countless and continual processes of the phenomenal world. In the timelessness of mountains and rivers, in the echo of a canyon wren's song, Snyder's poetry evokes the energy dancing eternally around us, bringing us out of our individual egos and closer to a Zen Buddhist understanding of how we fit into the interconnectedness of existence.

**BRAND MANAGEMENT AND THE WAL-MART MODEL****Chelsea Downs ('06), Anthropology**

N/A

**THE ECONOMICS OF HIP HOP CULTURE -- MORE THAN MUSIC****Chelsea Downs ('06), Independent Studies**

N/A

**EXPLORING OPPORTUNITY IN AMERICA: IMMIGRANT ENTREPRENEURSHIP AND RAGS TO RICHES SUCCESS****Anna Erdheim ('06), American Studies**

The United States is, indeed, the land of vast opportunity. Continually and repeatedly, people benefit from the luxuries and prospects provided by the nation's intrinsic freedom. In America people of all economic, social, and ethnic backgrounds utilize and enjoy the various opportunities of an egalitarian society to thrive. I will demonstrate how various people have emerged from disadvantaged circumstances to succeed in the United States, realizing that in America the majority of successful individuals are self-made. The concept of the self-made individual reveals the prospects and chances in America. In the United States, individuals have the rare chance to recreate their economic, professional, and social position. Moreover, America's free enterprise system enables social mobility as a result of an individual's effort, ability, or application. Therefore, I suggest that America's social flexibility allow diligent and resolute individuals to advance socially, economically, culturally, and politically despite their family pedigree. Accordingly, in America a determined and proficient individual can economically and socially evolve. Understandably, America's democratic, fair, and free society attracts immigrants. In growing numbers immigrants are becoming entrepreneurs in the United States because of their newly achieved independence and economic self-determination. Undeniably, fundamental economic opportunities for entrepreneurship are accessible to minorities and immigrants in the United States. The free enterprise system enables individuals to create their own profitable businesses. Indeed, it is possible for individuals from disadvantaged backgrounds to create their own businesses in the United States.

**FROM BALL OF FIRE TO CATTLE QUEEN: GENDER AND CLASS IN THE FILMS OF BARBARA STANWYCK****Kara Fagan ('06), American Studies**

This paper explores the career of film actress Barbara Stanwyck. Stanwyck was an incredibly versatile actress; her career spanning over 4 decades and covering a diverse range of genres from screwball comedies to film noirs to westerns. By situating Stanwyck's films in their specific historical moments, I examine how as cultural texts they either support and/or subvert the dominant social ideologies of the time. I argue that Stanwyck's characters are generally figures of resistance, individuals who openly and actively challenge the constraints of patriarchy and class oppression.

**DO BROWN ANOLES, *ANOLIS SAGREI*, HAVE DEAR ENEMIES?****Michael Fleming ('06), Biology**

A territory is an area defended by a group or individual. Territoriality is observed when the benefits gained from exclusive access to limited resources exceed the cost of defense. In the present study,

it was hypothesized that the Brown Anole, *Anolis sagrei*, will display dear enemy behavior because it is a possible ancestral trait. This is because dear enemy behavior has been found in an extremely diverse range of taxa. Furthermore, it is energetically less costly to not show aggressive behaviors to neighbors, in which a threat is not perceived. Nine pairs of male Brown Anoles were placed in clear plastic tanks with food and water. They were allowed to interact with one another so that territory could be established. The tanks were isolated so that the only lizards the test subjects could see were the one it was housed with. I will also set up ten additional tanks and house male Brown Anoles in isolation. These will act as the "strangers." Following this period, trials were set up in which the neighbors were relocated to a new, unfamiliar tank and aggressive behavior was reported. One neighbor was removed, a stranger was added and behaviors were recorded. This was repeated with the other neighbor. Following the experimental period, it seems that the Brown anole does display the dear enemy effect. Statistical analysis will be performed at a later time.

## **RISK-SENSATIVE FORAGING IN MAINE WOODLAND RODENTS**

### **Michael Fleming ('06), Biology**

When resources become available in a new environment, field rodents (those that forage and live in open fields) must decide whether the benefits of access to the abundant resources outweigh the risk of predation in a new, open environment. They are sensitive to the risks of predation as well as the risks involved in finding scarce food and will have to choose the best strategy. The experiment tests the hypothesis that woodland rodents, such as white-footed mouse, *Peromyscus leucopus*, and the eastern chipmunk, *Tamias striatus*, would exhibit a preference for either abundant food resources or familiar habitat. It was predicted that the risk of predation is less than the risk of finding scarce food in their familiar territory and that rodents would go out into the field to consume abundant food. Traps were set up with different total amounts of food with increasing food density with distance from the wood edge. As a control, traps were set with equal amounts of food, despite increasing distance from the forest. Trapped rodents were identified in order to determine their species and primary foraging location: forest or field. Following the experiment, there was not enough evidence to support the hypothesis but suggested that more trials over a longer periods of time would support the hypothesis.

## **INVESTIGATING THE MECHANISM OF A NOVEL RIBOSOMAL RNA DEGRADATION PATHWAY**

### **Daniel Fowler ('06), Chemistry**

Nonfunctional rRNA decay (NRD) is a novel quality control system that eliminates defective ribosomal RNAs (rRNAs) from yeast cells. Plasmid-encoded rRNAs containing single nucleotide substitutions in the peptidyl transferase center of 25S rRNA or the decoding center of 18S rRNA are co-expressed with endogenous rRNAs in *Saccharomyces cerevisiae*. Quantitative northern blots reveal the steady-state levels of the resulting nonfunctional rRNAs are markedly decreased compared to wild-type rRNAs. Further, the decreased expression is not the result of defects in rRNA transcription or processing, but instead is due to decreased stability of the mature, nonfunctional rRNAs. Mutations in other functionally important rRNA regions are being investigated to determine the magnitude and scope of substrates recognized by NRD. Finally, point mutations in intersubunit bridges (ISBs) are being made to determine differences between "functional" and "structural" mutations as they pertain to NRD.

## **SPINNERS AND LOSERS: LEWISTON'S IRISH AND FRENCH-CANADIAN IMMIGRANTS 1850-1930**

### **Katie Fuller ('06), History**

Irish and French-Canadian immigrants came to Lewiston, Maine to escape turmoil in their homelands. Their need for work forced them to take dangerous, monotonous jobs building and operating the city's many textile mills. Although early immigrants formed many cultural, religious, and social organizations to alleviate stressful mill life, both the textile companies and the immigrants shared an interdependency on one another that allowed the immigrants and the mills to survive in the industrial era.

## **THE ADEQUACY OF HEALTH CARE SERVICES FOR THE ELDERLY IN CHINA**

### **Alexandra Funk ('06), Economics**

This study examines the adequacy of health care services for the elderly in China, specifically focusing on the influence of location, method of payment, living situation, and financial status. The study finds that rural residents, respondents living alone and respondents unable to meet all of their daily costs have a lower probability of reporting the availability of adequate health care. It

also investigates the reasons why elderly respondents do not visit the hospital when it is necessary, concluding that financial and distance constraints are main deterrents. Finally, changes in the reported adequacy of health care over time are taken into consideration, and are found to follow a likely pattern given the history of the health care system in China. This is an important investigation given the historical background of health care in China, the current cost problems facing residents, and, consequently, the policy changes that will need to be implemented by the Chinese government in the near future.

### **MP AND 6CL-TRYPTOPHAN ADMINISTERED TO ATTENUATE SECONDARY PATHOLOGY IN GUINEA PIG SPINAL CORD INJURY**

#### **Katharine Gilroy ('06), Psychology**

At present, methylprednisolone (MP) is the only drug treatment administered to humans who suffer acute spinal cord injuries. Following trauma to the spinal cord, there is a window of time in which drug treatment can attenuate secondary damage that would otherwise occur to the spinal cord. MP most likely works by preventing one of the secondary pathological processes, the peroxidation of membranes. Researchers have looked at the prevention of another secondary pathological process, the release of the neurotoxin, quinolinic acid (QUIN) by macrophages. 4-chloro-3-hydroxyanthranilate and 6-chloro-D,L-tryptophan have been shown to block the production of QUIN and attenuate secondary deficits in sensory and motor function and tissue pathology in the guinea pig model of spinal cord injury. Using the guinea pig model, this study was the first to combine the administration of MP and a QUIN blocker for the treatment of spinal cord injury. Preliminary analysis of this small-scale design indicates a greater attenuation of functional deficits for those animals receiving both drug treatments compared with receiving either one of the drugs alone.

### **THE SKELETON IN MAINE'S CLOSET: CONTROVERSY SURROUNDING THE ALLAGASH WILDERNESS WATERWAY**

#### **Lora Golann ('06), Geology**

In 1966 the Citizens of Maine voted to protect the state's legendary Allagash River, a motion which created the Allagash Wilderness Waterway. Four years later the Allagash would become the first of 17 rivers in the National Wild and Scenic River System to be state-administered. During the latter half of the 20th century, the Maine Department of Conservation continuously abandoned its mandate to preserve the maximum wilderness character of the waterway, as it either illegally constructed, or looked the other way while others have constructed a growing number of vehicle access points, riverside parking lots, boat launches, and other such structures in the formerly pristine landscape of the Allagash. The culmination of this irresponsible state-management came in 1998 when the DOC demolished a timber crib dam at Churchill lake that had been grandfathered into the Wild and Scenic River system for its historical significance. In its place came an unsightly concrete steel dam that doubles as a bridge for logging trucks. Not only is this dam illegal under Wild and Scenic Rivers Act, but the state failed to apply for a Clean Water Act permit from the Army Corps of Engineers prior to construction, therefore overlooking permission entirely. This paper examines the ongoing conflict between the State of Maine and the Federal government concerning the Allagash Wilderness Waterway. In some sense the case of the Allagash provides a unique view into the policies surrounding America's dwindling untouched land, but on the other hand it demonstrates an archetypical quarrel between national and state government, and local versus outsider views of land and resource use.

### **MONITORING SURFACE DISPLACEMENT OF THE COLBY GREEN RETAINING POND DAMS**

#### **John Goss ('06), Geology**

The Colby Green is a campus expansion project which began in October of 2003. The construction would result in three new buildings, additional parking, and an elliptical 75,000-square-foot southeast of Mayflower hill drive. There were also plans for the construction of three run-off management and sediment ponds bellow the green. The water is retained in the pond by earthen dams composed of cobbles and soil procured from the excavation of the building sight. Because the composition of earthen dams is variable depending upon the soil with which it is composed, the structural integrity of the dams is variable as well. The ability of soil on Mayflower hill to retain water and produce frost action raised concerns about the strength of the dams. In order to monitor the surface displacement of the dams I drove 500 stakes 200 into the ground and in straight lines across the faces of the dams in the fall of 2005. The stakes were placed approximately 3 meters apart and were driven in vertically. I returned to the sights after the spring thaw of 2006 and looked for any signs of movement resulting from frost-heave, surface creep, or any other form of mass wasting. Fortunately, there was no recordable sign of movement in the stakes across any of the retaining ponds.

## **GENDER DIFFERENCES IN THE EFFECTS OF SOCIAL CONTEXT ON EMOTIONAL RESPONDING**

### **Cheryl Hahn ('08), Psychology**

This study examines the effects of social cues on emotional responding of men and women. Literature suggests that emotional responses are influenced by the presence and expressiveness of other individuals. We examined whether social cues influence the experience of emotions differently for men and women. Gender differences in self-construal led us to expect that women would be more sensitive to emotional cues from other individuals. We examined this hypothesis by asking men and women to watch amusing and sad film clips. On a split screen, participants watched the films and the faces of inexpressive (neutral condition) and expressive (expressive condition) individuals videotaped while watching the same films. Men reported experiencing similar levels of positive and negative emotions in the expressive and neutral conditions. In contrast, women reported experiencing more intense positive and negative emotions in response to the films in the neutral condition than in the expressive condition. These results suggest that women are more sensitive to expressiveness of other people when reacting to emotional stimuli. Women may allocate their attention to the social cues at the expense of attending to the actual emotional stimulus, resulting in a dampened emotional responding in the presence of emotionally expressive others.

## **IS BASEBALL STILL AMERICA'S NATIONAL PASTIME, OR HAS FOOTBALL BECOME THE ALL-AMERICAN SPORT?**

### **Tyler Hales ('06), American Studies**

Sports have had an undeniable impact on American society, particularly over the past century when baseball became rooted as the 'National Pastime.' For nearly one hundred years, baseball had run into little competition for the hearts of Americans. However, at the turn of the 21st century baseball became less solidified as America's game as the popularity of football in America continued to rise. The beginning of the 21st century has witnessed unprecedented levels of popularity in both football and baseball, as the sports seem to be battling for the country's attention. In my study, I provide a definition for 'National Pastime,' as I research the histories of each sport and their rise in popularity. In addition, I collect data on where average Americans stand on this issue, as the true answer to this question of what is the national pastime lays in what Americans believe. Although I admit football as become a staple in American society, I argue that baseball does indeed remain America's 'National Pastime' through the use of a variety of supporting examples.

## **WHY DO MEN HATE ANI DIFRANCO? THE CONNECTION BETWEEN WOMEN ROCK MUSICIANS AND THE IMAGE OF FEMINISM**

### **Katherine Hamm ('06), American Studies**

'Angry chick rock,' a phrase familiar to most college students, typically invokes a strong response. It may be a defensive one, or one in agreement with such a labeling of a musical genre. Yet the term is very telling about the manner in which women rock musicians impact the way men view women and feminism. Three artists, Ani DiFranco, Fiona Apple and Alanis Morissette, often suffer from this label. As strong, independent, and talented individuals, these women serve as a threat to the societal control men currently hold. The media also aids in suggesting that these women are a threat to men, by portraying them as aggressive and irrationally angry people. These ideas were tested through a survey of Colby College students, which came back with some surprising results. It seems clear that men often have a negative response to this music because of the potential it has to break down gender barriers in place today.

## **PRE-CIVIL WAR ACTS OF VIOLENCE AND THEIR INFLUENCE ON THE CIVIL WAR**

### **Benjamin Herbst ('08), History**

This project looks at the influence of the Caning of Charles Sumner by Preston Brooks and John Brown's Raid on Harpers Ferry on the outbreak of the Civil War.

## **MAN-MADE MENOPAUSE**

### **Madeline Horwitz ('06), Science, Technology, and Society**

The menopause that we think of as an undeniable biological phenomenon is actually a historical product of the medical and cultural manipulation of the female body. Any woman ended her menstruation cycles, is deemed to have entered into menopause. However, what the cessation of periods means and the impact it has on a woman's life is culturally specific. While menopause has occurred for as long as women have reached menopausal age, the onset of the American Victorian Age changed the cultural construction of menopause and adapted it to the societal norms

of the time. This new construction of menopause not only incorporated the public perception of women who no longer menstruate, but gave meaning to the effects menopause has on a woman's body, her life goals, and how she was expected to behave after menopause. In this paper I will expose the scientific, historical, and cultural reasons for the medicalization of menopause, and the ways in which menopause has been viewed by individual women, their health care providers, and society on the whole. I will also explore the myth that women must be treated with hormones to 'cure' them of old age.

### **A COMPARISON OF FOREST TYPE RESILIENCE TO STRUCTURAL AND COMPOSITIONAL CHANGES FOLLOWING BEECH BARK DISEASE INFESTATION**

**Sarah Hoskinson ('06), Biology**

Pathogens change forest composition and structure by selectively eliminating susceptible species and individuals. Caused by a complex between an exotic scale insect and fungi, beech bark disease has infected mature American beech (*Fagus grandifolia*) trees through most of the species range. Before succumbing to the disease, infected trees generate root sprouts, transforming beech from a dominant canopy species into an abundant subcanopy species. Root sprouting can create dense beech thickets that interfere with the regeneration of other species. Excluding species from the understory has ecological and economic implications. This study compares the resiliency of different forest community types to compositional and structural change from beech thickets. The spatial distribution and density of beech sprouts, as well as the density of other species in the thickets were measured in seven different forests in central Maine. Mixed hardwood forests, specifically an ash-birch-maple forest, tend to be most resilient to change, while a hemlock-pine-oak forest was least resilient. This information may be useful for managers to prioritize forest community types in which to control beech thickets.

### **SCHENKERIAN ANALYSIS OF THE ALLEGRO MOVEMENT FROM BACH'S FLUTE SONATA IN E MAJOR**

**Barbara Hough ('06), Music**

Johann Sebastian Bach composed pieces in the Baroque period that consisted of melodically fluent lines detailed by ornaments and figurations. For this reason, his music is ideal to be analyzed using the ideas of Austrian theorist Heinrich Schenker. Schenker uses intricate graphs that show the important prolongations of scale degrees as well as harmonies. His combining of melody, counterpoint, harmony, and form help the listener develop a clearer understanding of a given piece of tonal music. Schenker places importance on the fundamental structure (Ursatz) of a piece and Bach's music stresses pitches that fit this structure well. I will analyze the first half of the Allegro movement of Bach's sonata in the style of Schenker; I will demonstrate, with graphs, the prolongations, middleground transformations, background and foreground levels, and details that I hope will help the listener to appreciate my recording of this movement. The graphs are so intriguing because they use limited symbols to explain concepts that could take many words to illustrate.

### **AN OBSERVATIONAL STUDY OF CAVITY NEST SITE SELECTION IN BLACK-CAPPED CHICKADEES (*POECILE ATRICAPILLUS*)**

**Malcolm Itter ('07), Biology**

Black-capped chickadees, *Poecile atricapillus*, are weak cavity nesters, constructing their nests in decayed hardwood tree species. In most mixed deciduous forests black-capped chickadees tend to favor small diameter quaking aspens and paper birches over other tree species. Further, cavity nest site selection may be influenced by a variety of other factors including mate and food proximity, predation risk, forest structure and successional stage, and the presence of species with similar habitat requirements, such as downy woodpeckers. In this study I identified 5 black-capped chickadee cavity nests in the Colby College Arboretum during the month of April 2006. The nest tree species was identified at each of the nest sites as well as the nest tree's height, age, and density. Additionally, 10-meter radius plots were set up around each nest tree allowing for measurement of the surrounding forest density and composition and observation of general forest characteristics. The data collected at these 5 nest plots was then compared to data collected from 5 randomly selected 10-meter radius sample plots to determine if there were significant differences in the characteristics of nest sites and random sites within the same forest. Preliminary analysis indicates that black-capped chickadees favor heavily decayed paper birches and black cherries in areas of young forest composition with high snag densities and high densities of early successional species. However, a more rigorous analysis of the data found both at the nest plots and the sample plots is still in the process of being completed.

### **UPREGULATION OF SADNESS DURING FILMS: A SELF-REPORT ANALYSIS**

**Margaret Jackson ('06), Daniel Osar ('06) and Kathryn Rooney ('06), Psychology**

There has been significant research performed on the down regulation of emotions. It has been found in this research that reappraisal is an effective way of stunting negative emotions without physiological repercussions. Additionally, expressive suppression is effective at reducing facial signs of sadness but is physiologically taxing without actually reducing the negative experience. In this experiment we sought to explore upregulation of sadness using a sad film clip. Replicating the methods of prior studies, we asked participants to either exaggerate their facial expressions, reappraise the film such that it was more personally relevant, or to simply watch the film without instruction. Using 30 participants, we found that the reappraisal group reported experiencing more sadness than participants in either the control or exaggeration conditions. This finding remains consistent with the previous literature on down-regulation of emotion with reappraisal being a significantly more effective way of regulating emotions in comparison to facial suppression or exaggeration.

**PIERO DELLA FRANCESCA: GEOMETRY IN PAINTING****Julie Jaenicke ('06), Mathematics**

TITLE: Piero della Francesca: Geometry in Painting ABSTRACT: Piero della Francesca had two passions - art and geometry. The Renaissance artist was a master of painting and also of linear perspective. Piero wrote what he understood of the math behind perspective in the book A Treatise on Perspective which influenced many Renaissance artists, including Leonardo da Vinci. Discussed is the integration of geometry and art within the works of Piero. Specific paintings are analyzed including his most famous painting, The Flagellation of Christ.

**CHALLENGES IN RADIATIVE TRANSFER MODELING - W3 IRS5****Lent Johnson ('07), Physics and Astronomy**

In an effort to interpret spectroscopic and photometric data describing the W3 IRS5 high-mass star formation region, we are conducting a program of radiative transfer modeling using a Monte Carlo modeling technique to produce inferred spectral energy distributions (SEDs) of the region. By fitting our model to the observational data, we hope to constrain the physical parameters of the basic system geometry and cloud mass distribution. This data would add to our overall understanding of high-mass star formation processes. I present here our best fit SED to date in an on-going modeling effort. In the process of our research, we have encountered a number of challenges that limit the full interpretation we might make. These limitations include resolution limits of our observations, uncertainty in the multiplicity of protostars in the region, uncertainty about the evolution of protostars associated accretion disks and jets, and the capabilities of the modeling code we employ. We conclude that there are many aspects of high-mass star formation that remain unclear, exactly because of difficulties like the ones we are facing.

**MODELING SPATIALLY EXPLICIT HUMAN-WILDLIFE CONFLICT: GIS AND MOOSE-VEHICLE COLLISIONS IN MAINE****Alexandra Jospe ('06), Environmental Studies**

Wildlife-vehicle collisions are one form of human-wildlife conflict with high risk for human health and high cost for property damage. I created a spatial model using ArcGIS to predict the location of moose-vehicle collisions (MVC) in Maine. I used t-tests and chi-squared tests to identify input variables that were statistically robust predictors of MVCs compared to random control sites. To do this, I created 250m buffers around each MVC and an equal number of random control sites generated along state roads. In each buffer, I calculated the percent of each variable class that was filled with various predictor variables. The most significant variables include land cover type, speed limit of the road, class of the road, distance of the accident site from water bodies, presence or absence of moose derived from the state GAP analysis, slope, and road density. The significant variables were used to develop a logistic regression equation, which was used in the final GIS model. The model was validated using MVC data from years not included to create the model, and was found to significantly predict MVCs. These results have implications for MVC mitigation, as well as for understanding how GIS can be used to incorporate landscape data and incident data to predict human-wildlife conflict.

**MODELING SPATIALLY EXPLICIT HUMAN-WILDLIFE CONFLICT: GIS AND MOOSE-VEHICLE COLLISIONS IN MAINE.****Alexandra Jospe ('06), Environmental Studies**

One form of human-wildlife conflict that has high costs in terms of both money and human lives is wildlife-vehicle collisions. I created a model using ArcGIS to predict the location of moose vehicle collisions (MVC) in Maine. For each MVC, I created a 250m buffer, and an equal number of control



sites with buffers. In each buffer, I calculated the percent that was filled with various predictor variables. The variables found to be most significant in predicting MVCs included land cover type, speed limit of the road, class of the road, distance of the accident site from water bodies, presence or absence of moose derived from a Gap analysis, slope of the land, and road density. I used t-tests and chi-squared tests to determine which variables were significantly different from the control sites. The significant variables were entered into a logistic regression, which was used to create the GIS model. The model was validated using data from years not included to create the model, and was found to significantly predict MVCs. This has implications for MVC mitigation, as well as further implications for using landscape data to predict human-wildlife conflict.

## **OFF THE TRACKS**

### **Emily Judem ('06), American Studies**

This project is a historical fiction novella, which centers around a Viennese Jew who emigrates to New York in 1938 and ingratiates herself with the 'uptown' German Jewish social circle. The piece follows and intertwines the life journeys of her, her son, and her granddaughter. The work is largely based on the examination of my own grandmother's life, and on research of the historical moment in which she lived. This work intends to offer a unique story that complicates the linear path mainstream history so often ascribes to American Jews.

## **ENERGY USE PATTERNS AND POTENTIAL AREAS FOR ENERGY CONSERVATION IN DORM ROOMS AT COLBY COLLEGE**

### **Sarah Kelly ('06), Environmental Studies**

This study gathered data on Colby students' energy use patterns in dorm rooms. Methods to collect data include a campus wide energy use survey and a dorm energy experiment. The energy use survey was available online and 582 students filled it out. The dorm energy experiment used energy saving technology and energy conservation education to work to lower energy use in dorms. Analysis of Colby students' energy consumption trends and response to energy saving techniques, along with a comparative study of other colleges' energy saving efforts will be used to formulate recommendations for future energy conservation at Colby.

## **SOLAR PANEL MODELING ON SUITABLE ROOFS AT COLBY**

### **Sarah Kelly ('06) and Scott Shahverdian ('06), Environmental Studies**

This study used ArcGIS to assess photovoltaic panel suitability on roofs at Colby College. Spatial data and information on building dimensions were obtained from the Colby Physical Plant. Information for solar calculations was obtained from online resources. We selected three buildings based on direction the buildings faced, angle of the roofs, and the building's energy use. We developed a triangulated irregular network (TIN) model to calculate aspect, area, and slope from edited points. The three roofs are Goddard-Hodgkins (the Green House), Alford Athletic Center, and Lovejoy. By consulting online solar calculators to assess the potential sun radiation in Waterville and opportune angle for panel placement, panels were placed on the roofs and energy gain in kilowatt hours (kwh) was computed through GIS.

## **SILENCE IN SILENCE: THE TITULAR SIGNIFICANCE OF SHUSAKO ENDO'S NOVEL**

### **John Kester ('08), East-Asian Studies**

In his famous novel on Christianity in seventeenth century Japan, *Silence*, Shusaku Endo continually uses silence as a metaphor with multiple contextual meanings. Endo depicts Edo Japan, an era in which discovered Christians were viciously persecuted, and foreign missionary priests, if found spreading the faith, would be tortured; that is, forced to apostatize; and even killed. In such times of brutal prohibition, priests like Sebastian Rodrigues, through many of whose letters the novel reveals its themes, were forced to keep their faith hidden from Hideyoshi's authority. The continuity of the missionaries' faith in the seemingly unsuitable culture of seventeenth century Japan depends on concealing it from the government. The priests and Christian villagers cloak their beliefs from the intimidating Tokugawa bakufu, struggling at the same time with the fact that, amid the atrocities committed against Christian followers, amid their strengthening silence, they receive no word from God, no reaffirmation that their unwavering allegiance matters. God is silent. Finally, the novel's existence in and of itself reminds the reader of history's troubling failure in recounting the role of Christianity in Japan; the reader realizes that had Endo not made it his mission to break the silence, such essential history could remain unknown. This essay will focus on the various, changing metaphoric meanings of silence throughout Endo's novel both through Father Rodrigues' letters before he is captured and through the narrator's words in the rest of the novel.

## **SYNTHESIS AND STRUCTURE OF NOVEL POLYPHENYLENE MACROCYCLES**

**Hui Kim ('06), Chemistry**

The synthesis of fully-conjugated, all-carbon polymers and oligomers is of interest due to their potential use as new materials in a wide variety of photovoltaic applications. In this project, synthetic approaches to novel macrocycles using the Suzuki-Miyaura cross-coupling reaction will be described. The unusual architectures of these target macrocycles, which contain orthogonal aromatic rings, makes them especially interesting molecules for study. The efficiency of various catalysts in facilitating the reaction will also be examined, and the investigation will be complemented by computational study.

**WAS HANDEL A PLAGIARIST?****Hye Kim ('08), Music**

Borrowing musical materials from earlier works was a common practice during the Baroque era, and many composers, including his contemporary, Johann Sebastian Bach, had reworked earlier compositions. Yet, it has long been acknowledged as that the extent of Georg Frederic Handel's 'borrowing' was unusual even for the time. In the nineteenth century, a serious issue arose regarding this 'borrowing' in Handel's compositions. Although early critics noted that Handel used music by other composers in his compositions, and Handel's 'borrowings' from his predecessors and his contemporaries caused an uproar since they contradicted the romantic idea of a composer creating beautiful music out of nothing. More recently, music historians have become more lenient towards the use of the practice of 'borrowing,' believing that Handel often transformed and improved his materials thoroughly when he reused them in new contexts. This paper examines Handel's borrowing in two overlooked pieces: The chorus 'Egypt was glad' from Israel in Egypt and the aria 'O voi dell'Erebo' from La Ressurrezione, based respectively on Kerll's canzona and Keiser's aria 'Costante ognor' from Octavia. It will suggest that Handel's borrowing sometimes amounted to outright plagiarism, perhaps diminishing his stature as a composer.

**BARBERING: A BEHAVIORAL EXPRESSION OF DOMINANCE AND AGGRESSION IN CAGED MICE (*MUS MUSCULUS*)****Spencer Koury ('06), Biology**

Laboratory mice, *Mus musculus*, are the test subjects of thousands of experiments in fields ranging from behavior to oncology. These mice are exposed to increased stress, cage housing and their role in experiments, resulting in behaviors such as barbering. The ultimate causation of barbering is unknown, and some scientist hypothesize this behavior is an individual behavior aimed at establishing dominance, other scientists believe it to be a mutual or cooperative social behavior, and still others think it is an abnormal repetitive behavior. In this study I will test the hypothesis that barbering is a dominance related behavior. I predict that dominant males, as assessed by an observational dominance test, barbering history, and size, will be more likely to exhibit barbering behavior. To test this, eighteen C-57 male mice and eighteen CD-1 male mice were be paired based on their genetic predisposition for and previous experience with barbering, as well as size. In the eighteen C-57 mice no barbering behavior was observed prior to the experimental pairings, thus no barbering exposure could be determined. Because the study behavior was not displayed, even under increased stress, the experimental procedure could not continue. No conclusion could be drawn as to the ultimate explanation of barbering. The hypothesis was not supported, although neither were the alternate hypotheses, as the study behavior was not truly tested.

**EFFICIENT ENERGY ALLOCATION IN FORAGING: A TWO MODEL STUDY IN THE ROLE OF LEARNING****Spencer Koury ('06), Biology**

Foraging represents one of the largest expenditures of energy for any individual, a number of studies and theories have been developed to predict and model this behavior. This study uses two model species to examine the presence of learning, or spatial and temporal memory formation, and its subsequent role in foraging behavior. Learning can greatly enhance ability to locate food resources, with a significantly decreased search time. To prove the hypothesis that learning is an evolutionary adaptation designed to increase efficiency in energy allocation, this study set out to quantify, and statistically prove there is a fitness benefit to learning and memory formation by describing it in a natural setting using black capped chickadees (*Poecile atricapillus*), and recording expenditure in a simulated setting with laboratory mice (*Mus musculus*). It was predicted that black capped chickadees would return to foraging sites found to be abundant in resources. Predicting latency time to first arrival after placement would decrease, while number of visits at a constant foraging site would increase over time. Secondly, laboratory mice would navigate a maze in shorter time with less energy spent. Both experimental designs, field and lab, were inadequate to collect sufficient data to support either the null or alternative hypothesis. The errors in design, confounding variables are here discussed, as well as new proposed experimental designs

addressing these errors.

### **GENETIC BASIS FOR SELF COMPATIBILITY IN *WITHERINGIA SOLANACEA* (SOLANACEAE)**

#### **Spencer Koury ('06), Biology**

Most plant species have mechanisms to prevent self-fertilization, yet there exist species like *Witheringia solanacea* which have developed the ability to create viable offspring from the recombination of their own gametes. While self-fertilization is possible, it only occurs in certain individuals and populations, the causation and conditions for this is the continued subject of research for Professor Stone. This study is part of that continued research effort, focusing on determining the genetic basis of self-compatibility. The experimental design utilizes a set of genetic crosses and backcrosses to describe and define this gene. The experiment is currently examining the F1 generation, in which the self-compatible individuals must be identified to proceed with the creation of the F2 generations and any necessary backcrosses. This poster presents the general experimental design as well as the specifics of phenotyping the F1 generation.

### **SPACE AGE LEARNING: EDUCATION REFORM IN THE USSR AND USA IN THE AGE OF SPUTNIK**

#### **Courtney Kubilis ('06), History**

This project explores the way in which the Cold War permeated every aspect of life in both the United States and the Soviet Union. Using Cold War publications, this thesis examines public education in both countries in order to illustrate how during this period social programs fell under the realm of national defense. Education became a fundamental weapon in the Cold War. In the post-Sputnik era, both the Americans and the Soviets engaged in comparative educational studies of their adversary in order to improve what they perceived to be weaknesses in their own systems while at the same time working to surpass the other. Ironically, while engaged in an intense competition, both countries looked to the other's educational system and took from it in order to strengthen schools at home. Therefore, in the end, in responding to their adversary's advancements and enacting parallel reforms, they became more similar.

### **AN EVALUATION OF THE GHANAIAN EDUCATION SYSTEM**

#### **Christabel Kwabi ('06), Education and Human Development**

The focus of this presentation is to evaluate the quality of education that is offered to Ghanaian school children, ranging from primary school education to high school. The first formal education system was instituted by the British during the era of colonization. Since then, some of these colonial influences have remained and continue to impact education. In addition, other historical factors such as the role of Structural Adjustment Programs and the globalization of Ghana's economy have also influenced education. Thus, the goal of this presentation is to analyze the impact of education on the youth that go through it, the reasons for the trends seen, and what can be done to improve the situation.

### **PRIORITIZING LAND PURCHASES FOR THE BELGRADE REGIONAL CONSERVATION ALLIANCE**

#### **Hilary Langer ('06), Karen Prisby ('07) and Rachel Terry ('07), Environmental Studies**

The Belgrade Regional Conservation Alliance is an organization that is dedicated to preserving land and water quality in the Belgrade Lakes region in Maine. The BRCA holds land in such towns as Belgrade, Mount Vernon, New Sharon, Vienna, Rome, Smithfield, and Oakland. The BRCA is looking to expand its acreage in and around these areas to better accommodate the public and to promote the ongoing effort to conserve land as part of the Kennebec Highlands Project. The BRCA is currently considering parcels of 50+ acres in New Sharon, Rome, Belgrade, and Mount Vernon. In order to identify possible suitable parcels, we completed a GIS analysis and produced these layered maps, which highlight areas of land that we think might be desirable to the BRCA. Our analysis encompasses human access, wildlife access, and the locations and sizes of parcels.

### **THE COST OF CONSERVATION: PAYMENTS FOR ENVIRONMENTAL SERVICES ON THE OSA PENINSULA, COSTA RICA**

#### **Hilary Langer ('06), Environmental Studies**

Costa Rica has benefited from its international reputation as a leader in innovative environmental policy. Central to modern conservation efforts is Pagos de Servicios Ambientales, or Payments for Environmental Services (PES). The PES program provides direct payments to compensate individuals for services that their forests provide. This study examines the land use changes associated with PES and compares these changes to the effects of other conservation initiatives. It

focuses on Costa Rica's biologically rich Osa Peninsula.

## **MARYLAND AND KENTUCKY: HOW ABRAHAM LINCOLN KEPT EACH LOYAL TO THE UNION**

### **Nicole Lavery ('07), History**

The Civil War is commonly thought of as a war over slavery between the slave states of the South and the free states of the North. However, the four border states of Delaware, Kentucky, Maryland, and Missouri, do not easily fit into this category. President Abraham Lincoln needed to persuade and force the loyalty of these states to the Union. I will explicitly concentrate on Lincoln's policies in Kentucky and Maryland and how he was able to keep these states in the Union, centered specifically around the suspension of civil liberties.

## **HYPATIA: THE ORIGINAL WOMAN MATHEMATICIAN**

### **Jane Leary ('06), Mathematics**

ABSTRACT: Hypatia is considered by many to be the original woman mathematician. She was raised in the world of education by her father Theon, the leading scholar of Alexandria, Egypt. She is considered one of the most intelligent mathematicians, scientists and philosophers of all time. Her influence on the world of mathematics and specifically the role of women in this field continues today. Discussed are her mathematics and the studies that have developed as a result of her influence.

## **STATUS AND GENDER IN KOREA**

### **Jane Lee ('06), Anthropology**

Korea only recently became a major player in the global economy and they achieved their economic success in a relatively short time. One explanation for this quick rise to success is that following Korea's independence from Chinese and Japanese rule, Korea wanted to create a new national identity that would separate them from their past of outside domination. Their struggle to achieve a positive national identity includes encouraging consumption, and it is the aim of my paper to explore the ways in which modernization and consumption has affected gender roles, specifically for women across class lines.

## **VARIATION IN BEACH PROFILES AND SEDIMENT CHARACTERISTICS AT POPHAM BEACH, PHIPPSBURG, ME**

### **Kathryn Lidington ('06), Geology**

Beaches are among the most dynamic of geology environments, influenced by wind, waves, currents, tides, and storms. These process agents continually modify a beach's morphology and sediment characteristics, and they are especially important in the changeover from a summer beach profile to a winter profile. The beach profiles and grain size distributions of four sites at Popham Beach in Phippsburg, ME were monitored through the fall to assess some of these changes. X-ray diffraction work was also conducted to determine the mineral constituents of the beach sediments and their maturity. Analysis of the results concludes that Popham Beach does not follow the usual changeover pattern from summer to winter profile. Discussed are the results, the analysis, and a hypothesis offering explanation for the irregularities found at Popham Beach.

## **GENETIC VARIATION BETWEEN POPULATIONS OF THE RARE ORCHID ISOTRIA MEDEOLOIDES AND IMPLICATIONS FOR CONSERVATION**

### **Patrick Lizotte ('06), Biology**

GENETIC VARIATION BETWEEN POPULATIONS OF THE RARE ORCHID ISOTRIA MEDEOLOIDES AND IMPLICATIONS FOR CONSERVATION *Isotria medeoloides* is a rare orchid that is currently threatened in the United States. Three main populations groups exist: one in the southern Blue Ridge Mountains of western North Carolina, one in northern Virginia, and a third in New England extending from southwestern Maine through central New Hampshire and into Massachusetts. Leaf cuttings were taken from individuals from several populations from these three areas and analyzed for genetic diversity using applied fragment length polymorphism. Individuals within populations and between populations exhibit no genetic diversity. They comprise one large population. The low diversity over a large geographic region may be the result of long-range colonization and population foundation and continued gene flow and is consistent with this orchid's life history characteristics.

## **THE CULTURE OF OPEN SOURCE: COUNTERING HEGEMONY IN A DIGITAL ECONOMY**

### **Jia-Ling Loo ('06), Anthropology**

From its beginnings as the product of an anti-authoritarian, anti-government hacker culture to its right wing rhetoric of free market libertarianism, open source remains a highly contentious technical rationality not only because of its philosophy but also because of its apolitical nature that allows for a variety of cultural framings dependent upon necessity and the particularities of various utopian discourses. While open source proponents in the United States have largely viewed government as a barrier to its development, others in nations such as Peru and Argentina view the open source movement as beneficial in encouraging good governance and more bureaucratic transparency. Thus, open source development, in its lateral organizational structure and non-profit driven dogma, has opened up the possibilities for new modes of thinking about the dynamics of power that has and is shaping society. Likened to 'gift economies', the open source movement has revealed that the notion of intellectual property as indispensable to technological advancement is but an assumption that is non-universal, culturally specific and historically situated. However, that the movement hosts a diversity of opinion - from those who see open source as championing the 'invisible hand' of free market in its non-exclusive and participatory character, to New Left anti-corporate hippie types who view open source in terms of its potentialities in subverting bureaucratic control - only serves to recast the open source movement as more akin to heterotopic discourse rather than anarchic ideal. Thus, the true value of open source lies not in its revolutionary potential, but in its ability to reveal social organizational practices that help maintain economic and political structures of the network society.

### **INFLUENCE OF BODY SIZE ON STRESS-INDUCED COLOR CHANGE IN THE GREEN ANOLE (*ANOLIS CAROLINENSIS*)**

#### **Meredith Lowmaster ('06), Biology**

It is well known that stress causes the Green anole (*Anolis carolinensis*) to change color from green to brown. In addition to the entire body changing color, the postorbital skin may darken to form eyespots. This color change has, in fact, been used as an indicator of stress in several studies. However, very little has been done to investigate what influences the rate of color change. In this study, I investigate the effect of body size. An individually housed Green anole was placed in an arena and allowed to acclimate for 30 minutes. The lizard was then chased with a plastic rattlesnake and its color was observed. Chasing was stopped after 30 minutes, or when the individual became completely brown (though this occurred very rarely). Time to formation of eyespots and time to appearance of brown blotches on the individual's sides were recorded. Data collected so far seems to indicate a correlation between smaller body size and faster color change. However, since this study is still in progress, the significance of this correlation will be determined once more data has been collected and analyzed.

### **BOTCHAN'S TRANSFORMATION IN ACCORDANCE WITH JUSTICE**

#### **James Luckenbill ('08), East-Asian Studies**

My essay focuses on the development of the protagonist's concept of justice in Natsume Soseki's novel, Botchan. Early in his life, Botchan is engulfed in arrogant selfishness, even lacking appreciation for the person who loves him the most. By the novel's closing, Botchan acts to benefit only others, ignoring consequences detrimental to his own being. Through a series of developmental stages, I wish to show how Botchan's growing concept of justice changes the way he thinks and acts, and enables him to become a selfless hero fighting for what is right.

### **VIRTUE EPISTEMOLOGY: RETHINKING THE PRESUPPOSITIONS OF KNOWLEDGE**

#### **Gregory Lusk ('06), Philosophy**

The traditional project of defining knowledge is the result of an antiquated view of the world. Virtue epistemology, a new flavor of reliabilism has a lot to offer, but still does not extend far enough in revising the derailed philosophical discipline. My suggestion is to widen the epistemic project to include other important cognitive achievements other than knowledge. This move, if I am correct, will allow into the epistemic project new conceptions of how knowledge functions in our lives, and allows the philosopher to create a more accurate account of what one is searching for in their epistemic pursuits.

### **REALITY AND LIMINAL SPACE IN MURAKAMI HARUKI'S 'DANCE DANCE DANCE'**

#### **Katherine MacBain ('06), East-Asian Studies**

Late 20th century Japan as presented in 'Dance Dance Dance' is a paradigm for what Guy Debord dubs 'the spectacle'. This world is a blend of Dunkin' Donuts and expense accounts, a world where what is real and what seems not to be often become tangled and interwoven. All of what once was regarded as reality has been sucked up and incorporated into layers of commodities and advertisements so that the real world can no longer be located but exists as a collection of images.

In this fractured space, Debord writes, "where modern conditions of production prevail, all of life presents itself as an immense accumulation of spectacles. Everything that was directly lived has moved away into a representation". In *Dance Dance Dance*, Murakami's protagonist floats between a life directly lived and one of representation, finally discovering freedom in his own alienation and using the form of the spectacle to authorize his own individual identity.

### **FROM PRIVATE PROTEST TO PUBLIC PHILOSOPHY: THE DEMOCRATIC SOCIETY OF PENNSYLVANIA AND THE ELECTION OF 1800**

#### **Julia Malkin ('06), History**

While there has been an abundance of research conducted on Thomas Jefferson's election in 1800, there has been little study of the significance of the Democratic-Republican Societies, the organizations that espoused republicanism seven years before. Focusing on the Democratic Society of Pennsylvania and the city of Philadelphia, this project investigates the crucial link between the Societies and Jefferson's success. Using the theory of origin of the yellow fever epidemic of 1793, the Whiskey Insurrection, and Jay's Treaty as case studies, the project examines the Societies' ideological battles against the Federalists. Although the Societies essentially lost these battles they survived for only a year, from 1793 to 1794 it was the groundbreaking forum they provided for popular debate and how they encouraged the common man to discuss the government that allowed Jefferson to defeat John Adams. Without the foundation they laid, Jefferson and his Party would not have been successful in overthrowing the Federalists, who had dominated the American political scene since the Revolution. This project illustrates this critical role the Societies played in setting the scene for a Republican victory.

### **THE CONFESSIONAL HERO OF THE 'TEMPLE OF THE GOLDEN PAVILION'**

#### **Morgan Manoff ('08), East-Asian Studies**

The destruction of the Golden Temple was an act of personal and religious rebellion by a young monk in post World War II Japan. Physically deformed, ostracized and confused, the young Buddhist finds refuge in the beauty of Golden Temple and builds a bond with it much like one would with a close friend or mentor. Through his delusion, however, the monk soon turns against the Temple, which he accuses of betraying him, and becomes intent on its destruction. This paper analyzes the character of the young monk via the idea of the 'confessional hero', and looks at how his acts of external violence and destruction are in fact misplaced acts of internal self-laceration. Over the course of the novel it becomes clear that in the monks mind he and the Temple cannot peacefully coexist, by looking into the character of the monk this paper will show how his love for the Temple made its very existence insufferable.

### **DENATURALIZING SEX BINARIES: PROFESSIONAL WOMEN OFFICIALS TRANSGRESSING GENDER BOUNDARIES**

#### **Jamie Manzer ('06), Anthropology**

This study combines ethnographic research and theoretical perspective to denaturalize specific male and female gender roles. I give particular attention to women basketball referees because they transgress their submissive female role by officiating a sporting event. The transgression is significant because sports are a primary space for men to demonstrate their masculinity. So women assuming an authoritative role within the sporting realm threaten men's ability to demonstrate their masculinity. That is, women transgressing their gender roles threaten to force men to do the same, or not fulfill their gender requirements. In order to best denaturalize, one must first establish what is natural. Gender specific examples of transgressions are complicated as the roles are so naturalized; from birth inclusive and exclusive boundaries limit and define acceptable behavior. I spent the past three years informally recording my experiences as a woman basketball official for the Central Maine area; my experiences transgressing my supposed female duties. Maine is a particularly patriarchal and conservative society. This holds true on IAABO Board 20, Central Maine's premiere officiating board. There are 122 total officials on my board, including only nine women. My study seeks to both describe and analyze several specific officiating experiences that demonstrate the implications of transgressing gender roles or merely the threat of it.

### **UNVEILING DEMOCRACY: THE RHETORICAL AND RITUALISTIC DISGUISES OF REPRESENTATION**

#### **Jamie Manzer ('06), Anthropology**

Reality versus perception. Constituents of democracy, the represented, rely on the consistency of our checks and balance system and trust this system to ensure individual rights to voters. It is believed that elected officials under a democratic system represent the majority consensus,

thereby representing all voters. In reality, it is impossible for voters to actually gain rights through the election process, but yet, we are socialized to think otherwise. Where we give up our power, abstractions and the implications of top down socialization help to maintain and support our pseudo-democracy. Rituals such as voting and basic legislative procedures numb both politicians and voters alike as it streamlines important democratic procedure and forces very different issues discussed throughout a session to be dealt with similarly. Arguably, consistency under the law should strengthen an argument in support of ritual process, but I contend that processes, certainly as I have witnessed at the state house in Maine, contribute to corrupt political moves and insufficient representation. The presentation will focus on rituals and procedures that essentially disguise the many negative attributes of democracy. Voting procedure and scripted session days, voter registration and politician's reelection campaigns (whether clean or not) are not actually democracy. However, Americans, including Mainers and the politicians themselves, subscribe to democracy as the best form of government, the fair, just and inspiring process of power distribution. What is democracy really? What are some of the hidden processes or abstractions that have helped to define and perpetuate Maine's version of pseudo democracy?

### **USING GEOCHEMICAL ALTERATION OF SEAFLOOR BASALTS AS A PROXY FOR FLUID FLUX THROUGH THE OCEAN CRUST**

**Lindsay Masters ('06), Geology**

Circulation of seawater through the mid-ocean ridge-flanks plays a vital role in exchanges between the oceanic lithosphere and the hydrosphere. The seafloor is permeated by fluids which act as conductors between the mantle, oceanic crust, and the ocean itself. Global fluxes and geochemical budgets are affected by the behavior of fluids moving through the basement and marine sediment. The hydrogeology of the seafloor affects the fluids themselves, their composition, flow rate, and the fluid charge/recharge zones. Understanding how the fluids modify their environment and how they develop is necessary for understanding how the fluids affect not only other marine systems, but also how larger global questions are approached.

### **A JOURNEY THROUGH MEMORY AND SELF IN THE WORKS OF EDWIDGE DANTICAT AND JULIA ALVAREZ**

**Kara McCabe ('06), English**

Understanding the interconnectedness of history and literature is especially important in analyzing the works of Caribbean women writers such as Edwidge Danticat and Julia Alvarez, for whom historical fiction has become an important means of creative expression. Many historians criticize the documentation of Caribbean history as being incomplete, sexist, and Eurocentric; in light of such assertions, Danticat and Alvarez integrate female voices into Haitian and Dominican history, respectively. By depicting the female experience on Hispaniola, both writers demonstrate that history's inherent place in individual memory. Alvarez and Danticat use many recurring symbols and images in imagining the Caribbean, and Caribbean-American, experience. Their works are inspired by the religion and spirituality of Hispaniola, and many symbols are drawn from Roman-Catholic and Haitian Vodoun beliefs: the Madonna, butterflies, bogeymen, flying humans. Other images have geographical-historical value, such as the Massacre River, the Atlantic Ocean, sugarcane fields, and the mountains of Haiti and the Dominican Republic. Such symbols capture how politics have permeated cultural and personal life on the island. Motherhood is a major theme for both Alvarez and Danticat; female communal bonds are important in both countries, and are formed strongly within matriarchal lineages. A woman's relationship with her mother often parallels her relationship with her homeland: both connections are characterized by love, beauty, and freedom, as well as pain, tragedy, and oppression. Additionally, Danticat and Alvarez suggest that immigration, because it often leads to separation from the mother/motherland, presents many obstacles—historical, geographical, familial, and personal.

### **EGO DEPLETION, CONTROL, AND THEIR EFFECTS ON INTRINSIC MOTIVATION**

**Chelsea McCann ('07), Michael Dieffenbach ('07) and Kristen Russell ('06), Psychology**

**EGO DEPLETION, CONTROL, AND THEIR EFFECTS ON INTRINSIC MOTIVATION** This experiment explored the effects of ego depletion and controlling behavior on the intrinsic motivation of 62 college students. We manipulated ego depletion by instructing some participants to suppress all emotion while watching a sad movie clip, and then all participants worked on 3-D block puzzles for a ten minute period. During this time, the experimenters controlled some of the participants through their behavior and verbal instructions. After the experimenter left the room under false pretenses, a four minute free choice was recorded. There was a significant main effect of ego depletion, such that participants who were ego depleted spent less time playing with the blocks in the free choice period. There was also a marginally significant effect of controlling behavior, such that participants who were controlled persisted longer during the free choice period. The interaction between ego depletion and controlling behavior was not significant.

## **A GENOMIC APPROACH TO DETECTING SALINITY-MEDIATED ZINC TRANSPORTER REGULATION IN THE EURYHALINE GREEN CRAB, *CARCINUS MAENAS***

**Amanda McGarry ('07), Biology**

Zinc is a vital nutrient for all known life forms, and plays an integral role in the functioning of many proteins and enzymes. Because it is such an important nutrient, eukaryotes have evolved several proteins to regulate the uptake, storage, and expulsion of zinc at the cellular level. While most terrestrial species obtain zinc through their diets, marine organisms are also able to obtain zinc through its uptake from sea water. This uptake is often associated with ion transport via transporter proteins in the posterior gills (Rainbow and Black 2005). Further, in many animals it has been observed that the accumulation of zinc increases as salinity decreases (Amiard-Triquet et al. 1991). This study served to identify and sequence the ZIP 1 gene in the crab, *Carcinus maenas*. The expression of this gene was localized to the posterior gills of the crab. The relationship between salinity and gene regulation is still unclear.

## **EDUCATIONAL OPPORTUNITIES AND AVERAGE INCOME IN MAINE TOWNS**

**Sharon McMonagle ('06), Environmental Studies**

This map was created as part of the Atlas of Maine project completed by the Introduction to Geographic Information Systems class. This map shows the locations of schools and libraries in Maine. Schools include public and private K-12 schools, public and private colleges, as well as vocational and technical colleges. Libraries include local, school, and college libraries. The mean income for each town was obtained from census data and is represented on the map. The goal of the map is to analyze the relationship between economic characteristics of a school district and the availability of resources associated with educational opportunity. All data was obtained from the Maine Office of GIS

## **LAKE WATER QUALITY ANALYSIS AND POSSIBLE REMEDIATION TECHNIQUES FOR CHINA LAKE, KENNEBEC COUNTY, MAINE**

**Sharon McMonagle ('06) and Bethany Peck ('06), Biology**

Colby College conducted an assessment of water quality and relevant watershed characteristics of China Lake, Kennebec County, Maine during the summer and fall of 2005. Physical and chemical parameters were analyzed to determine lake water quality. Algal blooms have been a problem in China Lake, a eutrophic lake, for over 20 years. Mean epicore phosphorus levels were approximately 17 ppb during the fall of 2005, slightly higher than the 15 ppb threshold for algal blooms. With the exception of 1985 and 1990, fall surface phosphorus levels have been above 15 ppb in every year since 1984. During the 2005 samplings, hypolimnetic phosphorus levels were as high as 200 ppb. The mean transparency in the summer and fall of 2005 was 2.90 ± 0.40 m and in August and September 2005 there was a sharp decline in dissolved oxygen below 10.0 m. Potentially anoxic waters cover 44.8% of the sediment in China Lake during the summer. Anoxic conditions increase internal nutrient loading, which was calculated to contribute 46% of the total phosphorus load to the lake. Maintenance of camp roads, buffer strips, and septic systems is important to reduce external phosphorus loading. However, to successfully reduce phosphorus levels in-lake remediation techniques, such as alum treatment, should be considered.

## **THE EFFECTS OF CLIMATE CHANGE ON CORAL REEF ECOSYSTEMS**

**Sharon McMonagle ('06), Alaina Clark ('08) and Jenna Morrison ('06), Environmental Studies**

Coral reefs are diverse and fragile ecosystems with very specific habitat requirements. The health of reef systems in Southeast Asia, Belize, and Australia were examined to assess the effects of climate change. Impacts on coral reef systems include increased global sea surface temperatures, changed patterns and intensity of El Niño Southern Oscillation (ENSO) events, hurricanes and other storms, and higher concentrations of dissolved carbon dioxide, which affects sea acidity. These global changes are resulting in an increased occurrence of bleaching events and reduced growth of new corals. Bleaching also increases the susceptibility of corals to disease, which may result in more mortality than the actual bleaching event. The effects of climate change have been observed and quantified on several coral reefs throughout the world. The 1997-1998 ENSO event caused an estimated 18% damage to Southeast Asian reefs, though some reefs experienced more severe bleaching. In Belize, this same event was compounded by the occurrence of Hurricane Mitch and caused the mortality of 48% of the coral reefs. Relatively few instances of coral bleaching associated with climate change have been observed on the Great Barrier Reef system in Australia. Anthropogenic sources of stress inhibit the resilience of corals to adapt and recover from the effects of climate change. Efforts should be made to reduce the impact of human activities on reef systems, and research and monitoring should be continued to identify and protect coral reefs that are more resilient to climate change.



**DEVELOPING A MODEL FOR PEDESTRIAN ROUTE SELECTION AT COLBY****Alexander McPherson ('07), Environmental Studies**

Millions of unconscious calculations are made daily by pedestrians walking through the Colby College campus. I used ArcGIS to make a predictive spatial model that chose paths similar to those that are actually used by people on a regular basis. To make a viable model of how most travelers choose their way I considered both the distance required and the type of traveling surface. I used an iterative process to develop a scheme for weighting travel costs which resulted in accurate least-cost paths to be predicted by ArcMap. The accuracy was confirmed when the calculated routes were compared to satellite photography and were found to overlap well-worn shortcuts taken between the paved paths throughout campus.

**CONCOMITANT ANTIBIOTIC AND MERCURY RESISTANCE AMONG GASTROINTESTINAL MICROFLORA OF FERAL BROOK TROUT, *SALVELINUS FONTINALIS*****Matthew Meredith ('06), Biology**

Mercury deposition in Maine has potentially selected for both antibiotic and mercury resistance in resident bacterial populations. Twenty-nine bacterial isolates were isolated from the gastrointestinal (GI) tracts of nine feral brook trout, *Salvelinus fontinalis*, caught in Lake Kennebago, Maine. 16S rDNA sequencing identified the isolates in nine distinct genera: one gram-positive genus and eight gram-negative genera. The isolates demonstrated multiple maximal antibiotic resistances, particularly against the penicillin and cephem families. Broad-spectrum mercury resistance to ionic ( $\text{HgCl}_2$ ) and organic mercury (phenyl mercuric acetate) was characteristic to all 29 isolates. Triplicate plate counts of total culturable bacteria from the GI tracts of six *S. fontinalis* exhibited no statistical difference between growth on 0 and 25  $\mu\text{M}$   $\text{HgCl}_2$  by Student's t test. A 1,200 bp fragment of the mercury resistance gene *merA* was PCR amplified in 12 isolates, and a 288 bp *merA* fragment was sequenced in 5 of those 12 isolates. An established positive correlation between antibiotic and mercury resistance is most likely applicable to the Lake Kennebago system. Phenotypic evidence of simultaneous antibiotic and mercury resistance and genotypic confirmation of the presence of *merA* suggests selection for *merA* may have indirectly selected for concomitant antibiotic resistance among the Maine bacterial isolates.

**EVALUATION OF IMMUNE CELL INFILTRATION AFTER SPINAL CORD INJURY IN THE GUINEA PIG****Marissa Meyer ('07), Raven Adams ('08), Katherine Lillehei ('07), Monica Phillips ('07) and Danielle Preiss ('07), Psychology**

Several candidate mechanisms have been identified that contribute to secondary pathology after spinal cord injury including oxidative mechanisms and toxic molecules such as quinolinic acid (QUIN). QUIN is produced by activated macrophages in several species (human, guinea pig, and gerbil) and accumulates after traumatic CNS injury and in cases of neuroinflammation. The peak of this accumulation in guinea pig spinal cord injury occurs at 12 days post injury. This mechanism is therapeutically available and several studies have shown that blocking QUIN reduces both functional and structural deficits. Blockade of QUIN has been initiated as late as 5 hours post injury without decrease in therapeutic effectiveness, but little is known about the therapeutic window or the length of time that therapy may be required due to presence of macrophages in the tissue. The present study was designed to detail the composition of the inflammatory response at the injury site following spinal cord injury in the guinea pig, and to determine the timecourse of the presence of microglia, macrophages, and neutrophils in the tissue after injury. Preliminary studies have been conducted testing several antibodies in pursuit of this goal. Antibodies to two cell surface markers, cd11b and cd45 can be used to differentiate between macrophages and microglia. Ly6G antibodies can be used to identify neutrophils. These antibodies have been tested for binding in guinea pig spleen and blood and will be used to quantify the cells in injured spinal cord. The authors gratefully acknowledge the INBRE program for funding of this project.

**MEDIA COVERAGE AND DISASTER RELIEF****Jessica Minty ('06), Economics**

This paper analyzes the effect of media coverage on donations made to relief agencies. Specifically, this empirical analysis examines the effect of the daily volume of domestic newspaper and television coverage devoted to the December 26, 2004 tsunami on daily web donations to U.S. relief agencies. Media coverage, as measured by daily newspaper word and picture counts, and by daily total television minutes, positively and significantly affects the amount of donations relief agencies receive. In addition, media coverage is found to have a significantly different effect on donations for some agencies.

## **SECRECY, SEXUALITY AND THE COVERT FEMININE POWER IN 'MASKS'**

**Liza Mitchell ('08), East-Asian Studies**

A presentation that explores the central issue of feminine power in the modern Japanese novel, *Masks*, written by Fumiko Enchi. The focus is on Mieko Togano's covert power that drives the action of the novel, the sources of this power—primarily secrecy and sexuality—and the motive behind it—revenge.

## **FROM HATCHERIES TO AQUACULTURE: A TECHNICAL SOLUTION TO A TRAGEDY IN THE UNITED STATES?**

**Jakob Moe ('06), Science, Technology, and Society**

The emergence of a technical solution to solve the devastation of the world's fisheries serves as a direct contrast to Garret Hardin's assertion in his essay 'A Tragedy of the Commons.' Hardin had asserted that the only solution to a tragedy of the commons should be that of social change, and not in the form of a technical solution. However, in the mid to late nineteenth century, aquaculture emerged through the federal government and subsequently in the form of hatcheries and laboratory facilities across the country. Firmly, the United States had invested in a technical solution, refraining from any social change, as Hardin would assert. Understanding the history of aquaculture, it is possible to judge how the technical promise of aquaculture merited its acceptance in U.S. science and its subsequent value in society. Specifically, case studies of the development of pond aquaculture, and the absence of marine aquaculture will be addressed to judge if aquaculture has historically solved the tragedy of the commons. These histories facilitate understanding of the historical value of aquaculture within the United States. Additionally, investigating aquaculture's current contribution to overall demand in the U.S., it becomes possible to answer if aquaculture is successful as a technical solution to the commons.

## **POTENTIAL EFFECTS OF DEEP-OCEAN CARBON DIOXIDE SEQUESTRATION ON FORAMINIFERA**

**Elizabeth Mollo-Christensen ('06), Geology**

The current concentration of CO<sub>2</sub> in the atmospheric is approximately 0.037%, and the level is rising every year due to anthropogenic and natural causes. Deep-ocean sequestration is a process proposed to reduce the amount of CO<sub>2</sub> released into the atmosphere and slow down global warming. This study uses *Allogromia laticollaris*, a species of tectinous foraminifera, to examine the potential problems of deep-ocean sequestration on benthic communities. Individual groups of *A. laticollaris* were exposed to elevated levels of CO<sub>2</sub>, varying from 1.5% to 9.0%, in a controlled chamber. Replicate control cultures were exposed to atmospheric CO<sub>2</sub> at the same temperature and humidity as the chamber. After 10-14 days of exposure, the change in pH of the cultures was recorded and the *A. laticollaris* were examined under a microscope to observe pseudopods as an indicator of survival. The adenosine triphosphate (ATP) was extracted from each individual *A. laticollaris* and analyzed using a luminometer. Two-sample t-tests were run on the data to check for significant differences in the amount of ATP present in the cells exposed to the different treatments. The general trends show that the foraminifera survived better at 1.5% CO<sub>2</sub> than at atmospheric levels. A decline in ATP production appeared between 3.0% and 6.0% CO<sub>2</sub>. At 9.0% CO<sub>2</sub>, the *A. laticollaris* did not do as well as the replicates exposed to atmospheric conditions, but still rebounded to atmospheric levels of ATP after being left at atmospheric CO<sub>2</sub> for 24 hours, implying they were in some type of dormant state. This data has several implications concerning deep-ocean sequestration, and shows that the concentration and duration of CO<sub>2</sub> exposure seem to be the most important factors in determining the survival of tectinous foraminifer communities.

## **POPULATION ESTIMATE OF DEER MICE, *PEROMYSCUS MANICULATUS*, IN THE FOREST TYPES OF PERKINS ARBORETUM**

**Jenny Mooney ('06), Andrew Johnson ('06), Ethan Payne ('06) and Virginia Raho ('07), Biology**

**Abstract** The deer mouse, *Peromyscus maniculatus* has a wide distribution across varied habitats, because of its ability to adapt to different environmental variables. By examining the population density of these mice across several forest habitats, a better understanding of their habitat preference can be obtained, and population densities can be determined to estimate total population sizes. Three trapping sites were established in the Colby Perkins Arboretum within distinct forest types: transitional, climax deciduous, and climax conifer. Trapping was performed over a seven night period, and captured mice were tagged with passive integrated transponders (P.I.T. tags). Using the Schnabel mark-recapture population estimate technique, a population estimate for each of the three sites was calculated. The coniferous and the transitional forest had similar densities of deer mice, and the climax deciduous had a substantially lower number of captured mice. However, the sample size in the climax deciduous forest was too small to calculate

a population estimate. The population differences found between forest types are associated with differences in specific environmental variables, such as depth and coverage of leaf litter, more than the overarching forest type. The number and species of non-P. maniculatus captures showed some trends, which further distinguished the habitat types. By increasing the number of trapping days, and increasing the area of each of the trapping sites, a more precise estimate of population variation could be performed.

### **THE LITTLE WHITE LIE THAT COULD SAVE THE WORLD**

#### **Jessica Moore ('07), Anthropology**

Why must anthropological writing be limited to that which is quantitative, qualitative, verifiable, real? When our discipline has come to be so enamored with the postmodern construct, why can we not take license to do some constructing of our own? Is it possible that a space can be created wherein an anthropologist takes on the role of fictional creator, basing one's characters on observed realities, reforming them to tell the truth that the truth cannot? Can fiction be truth? Can we borrow a voice? There is a necessity for the recognition of a new method of authorship that takes license to lie just a little bit. Using the intersection of literature and life, character and reality, the embellishing anthropologist may be the most effective tool we have to bring forth readable knowledge to an audience that extends beyond ourselves. A little white lie may be our passport to the truth.

### **ENVIRONMENTAL AWARENESS OF WATERVILLE JUNIOR HIGH STUDENTS**

#### **Jenna Morrison ('06), Environmental Studies**

Waterville Junior High students participated in an environmental awareness survey designed to assess the relationships among outdoor experience, environmental knowledge, and environmental behavior and the influences of gender and grade level. Environmental awareness indicates a fundamental understanding of the natural world which is essential for future sustainable development and resource use. At Waterville Junior High there are few opportunities for students to learn about environmental topics in the classroom. It is essential to gauge the foundation and acquisition of environmental knowledge to determine the ability of students to address local and global environmental problems. A total of 125 sixth graders and 136 eighth graders were surveyed and indicated that their most common sources of environmental information are school, television, and outdoor activities. While only 32% of adult Americans can pass a similar environmental knowledge test, 22% of sixth graders and 46% of eighth graders answered more than half the environmental knowledge questions correctly. A weak but positive correlation was identified between outdoor experience and pro-environmental behavior and between environmental knowledge and pro-environmental behavior. Mean scores on environmental knowledge questions were significantly higher for boys and mean scores on questions indicating pro-environmental behavior and concern were significantly higher for girls. The results of the survey are encouraging in terms of acquisition of environmental knowledge by junior high students. However, gender discrepancies in knowledge and concern should be considered when designing environmental curricula and teaching strategies.

### **USE OF DEVOTIONAL ART IN THE PUBLIC AND PRIVATE SETTING IN RENAISSANCE ITALY**

#### **Caroline O'Connor ('06), Art**

Recently, the study of the function of art has become an increasingly large field of art history research. The purpose of a work of art in the location it was made for is one of the major questions art historians are now asked. It is widely written that the use of devotional art was to make the written word physical, a way of making the bible and preaching of the church accessible to the masses. However, the art produced for public and private devotion were very different in their uses and design. Using two works of art found in the Colby Art Museum, this study examines these differences and how they apply to the uses of devotional art during the Renaissance period.

### **GLIMPSES OF HOPE, LAUGHTER, AND SADNESS: STORIES FROM BURMESE WOMEN REFUGEES IN THAILAND**

#### **O. Orantes ('07), History**

Breadwinners, educators, wives and mothers, the Burmese refugee women in the village of Huay Pu Keng, Thailand are examples of dedication and relentless hope for a future that may or may not bring closure to their tumultuous lives. Last summer, some of them and their families allowed me to spend time with them and ask: What does it mean to be a woman in the context of your village? Their answers were surprising and touching and often challenged my preconceived notions of womanhood and identity. The women communicated their fears and hopes collectively during three

women-only meetings and individually during home visits and casual interactions. Through laughter, tears, and touch, we were able to transcend a language barrier that at its worst appeared insurmountable and at its best humorously bearable. Their patience and attitudes towards our communication problem were testimony to a much larger way of looking at life that was both influenced and had influenced each woman's life-story. By the end of my time in Huay Pu Keng, it was clear to me that the answers to my original question were complicated by a much larger question: What is it like to be you? Through our conversations, I realized that these women view themselves as women in the context of their many identities (e.g. race, religion, familial connections, etc.) and fairly never in spite of them. Thus, the few times when they do separate woman-identity from other identities become monumental moments in their lives which they see as the exceptions that prove the rule. In this presentation I explore the different roles that women play in the village and the way these play on their varied identities. Thus, I suggest that these different roles allow them to constantly negotiate their position and the identity 'woman.'

## **EXPLORATION OF COMPOSITION IN MIXED MEDIA: FABRIC, STEEL, AND MAGNETS**

### **Courtney Page ('06), Art**

Fabric, steel, and magnets are materials with distinct functional purposes quite different from one another. During the course of the 2005-06 school year I brought them together to explore sculptural form and composition, each material becoming an integral part of the object. Forms rely on steel for support and line, fabric for mass and texture; the magnets add elements of motion, suspension, and visual interest. Experiments in composition resulted in forms of various dimension, color, weight, texture, balance, and stability, progressing from early solutions to more complex renderings and uses of the given materials.

## **MERCURY RESISTANCE IN A MULTI-DRUG RESISTANT STRAIN OF THE FISH PATHOGEN, *AEROMONAS SALMONICIDA***

### **Erin Parry ('06) and Kimberly Mukerjee ('06), Biology**

*Aeromonas salmonicida* NB, a fish pathogen that caused an outbreak of furunculosis, was isolated from Atlantic salmon, *Salmo salar*, during a routine hatchery inspection in 2003. This strain was found to be resistant to 1000 mM HgCl<sub>2</sub> and >32 mM phenylmercuric acetate as well as multiple antibiotics. Mercury (Hg) and antibiotic resistance genes are often located on the same mobile genetic elements, so the genetic determinants of both resistances and the possibility of horizontal gene transfer were examined. Specific PCR primers were used to amplify and sequence distinctive regions of the mer operon. *A. salmonicida* NB was found to have a pDU1358-like broad-spectrum mer operon, containing merB as well as merA, merD, merP, merR and merT, most similar to that of a *Klebsiella pneumoniae* plasmid pRMH760. To our knowledge, the mer operon has never before been documented in *Aeromonas* spp. PCR and gene sequencing were used to identify class I integron associated antibiotic resistance determinants and a tetracycline resistance gene typical of many tetracycline-resistant *Aeromonas* spp. The transposase and resolvase genes of Tn1696 were also identified through PCR and sequencing with Tn21 specific PCR primers. We provide phenotypic and genotypic evidence that the mer operon, the aforementioned antibiotic resistances, and the Tn1696 transposition module are located on a plasmid or conjugative transposon that can be transferred to *E. coli* DH5a through conjugation in the presence of low level Hg and absence of any antibiotic selective pressure. This research demonstrates that mercury indirectly selects for the dissemination of the antibiotic resistance genes of *A. salmonicida* NB.

## **THE EFFECTS OF CLIMATE CHANGE ON POLAR BEARS**

### **Bethany Peck ('06), Alexandra Jospe ('06) and Emily Sinnott ('08), Environmental Studies**

Anthropogenic emissions of greenhouse gases have caused global warming. Global temperatures are predicted to rise the most in polar areas, making the arctic one of the most vulnerable areas to climate change. Sea ice is melting earlier and forming later every year, a process that has grave consequences for arctic wildlife. Polar bears are dependent upon a stable ice system for foraging, resting, and reproduction. The melting ice leaves the bears with considerable less time for hunting. Polar bears do almost all of their winter hunting on the Arctic ice surface. They retreat to dry land, often fasting for months at a time, when the ice breaks up. The warming of the arctic and consequently the thinning of the sea ice have reduced the number of weeks mother polar bears have to feed and build the fat that enables them to sustain themselves and feed their young. When female polar bears are food stressed, they will not reproduce. Climate change can also affect polar bears through disease and anthropogenic affects. The synergistic nature of the effects of climate change on polar bears could cause their extinction in the near future.

## **'A SCHENKERIAN ANALYSIS OF BEETHOVEN'S PIANO SONATA NO. 8, 2ND MOVEMENT'**

**Stephen Planas ('06), Music**

Using Heinrich Schenker's theories of tonal music, I will analyze the second movement of Beethoven's Piano Concerto No. 8. From Mozart and Haydn to Beethoven and Chopin, Schenker's concepts have often been used to shed light on some of classical music's greatest masterpieces. His techniques have been the source of controversy over time, for some disagree with his ideas about the underlying background structure of a piece. Conversely, many believe that Schenkerian analysis is the most elegant means of studying tonal compositions. In my analysis of Beethoven's work, I hope to discover the most fundamental structure of the piece, the most reduced form of the composition. From this point, I will use Schenker's techniques of prolongation and transformation to determine how each note serves that fundamental structure. In the end, Schenkerian theory will hopefully give me a greater understanding of Beethoven's piano masterpiece.

**ECONOMETRICALLY MODELLING ALUMNI GIVING TO COLBY AND OTHER NESAC SCHOOLS****Michael Poplaski ('07), Economics**

\$ 1,600,073,000. Over one and a half billion dollars will catch the attention of almost anyone dealing with money. But this number is not out of some government budget or from a big corporation, but rather the amount alumni from 10 NESAC institutions contributed in donations to their alma maters during the period of 1993-2005. While there has been an academic focus on the individual alumni and their decision making process of whether to donate at all and if so, how much they will give, little work has been done to model aggregate donations received by the institution from their alumni. Since many institutions base their budget projects partly on expected donations from their alumni, having a model that will help them predict that amount is a worthwhile and important tool for them to have.

**AN DIE MUSIK****B. Pruitt ('06), Music**

A Schenkerian analysis of Franz Schubert's song 'An die Musik'.

**A SPATIAL ANALYSIS OF IMPERVIOUS SURFACES AT COLBY COLLEGE IN 1965 AND 2006****Katherine Renwick ('07), Environmental Studies**

Roads, parking lots, buildings, and other impervious surfaces do not allow rainwater to infiltrate the ground. As a result, they can lead to an increase in runoff to nearby ditches and streams, as well as a greater influx of pollutants such as motor oil that can often be found on paved surfaces. For this project, GIS was used to find the total area covered by impervious surfaces on the Colby campus, and to show how this area has grown in the past 40 years. It was found that new development on the campus has lead to a 56% increase in impervious surfaces at Colby since 1965.

**GRAY WOLF REINTRODUCTION IN THE GREATER YELLOWSTONE AREA****Katherine Renwick ('07), Charles Carroll ('08) and Liza Mitchell ('08), Environmental Studies**

In 1995, the Gray Wolf (*Canis lupus*) was reintroduced to Yellowstone National Park as part of a plan to restore the natural ecosystem of the Yellowstone area. Once ranging throughout most of the US, Gray Wolf numbers had been drastically reduced due to hunting and habitat loss, until in 1973 it was listed on the endangered species list. Gray wolf reintroduction was remarkably successful, and has lead to a self-sustaining population of wolves, which in turn restored many of the original ecosystem dynamics that had been altered by the disappearance of this important top predator. In 1993, the Gray Wolf was downlisted from endangered to threatened, representing a major victory for conservationists.

**LET US NOW PRAISE FAMOUS WOMEN****Erin Rhoda ('06), English**

For my presentation, I will tell the stories of three remarkable women who have experienced tragedy. After Hurricane Katrina, one woman was stranded on an overpass for four days with prisoners. A woman from Zambia takes care of twenty-seven children, eight of whom are her own and the rest of whom are the children of her dead brothers and sisters. Another woman is a Somalia refugee, making her way in Lewiston, Maine as a nurse. These women have shown me that everything we own can be lost in an instant, that life ♦ family, freedom, happiness ♦ is more precious and more fragile than we think. While they have lost, each woman has also gained a new,

deeper perspective on life; they have gained wisdom. I want people to hear these stories so that they may learn about both suffering and endurance. We must not forget the often-forgotten.

## **MOTION TRACKING AND PREDICTION USING FUZZY LOGIC**

**Patrick Rodjito ('06), Computer Science**

With the increasing need for flexibility and adaptivity in computerized systems, the application of fuzzy expert systems is becoming increasingly commonplace in today's industry. Fuzzy logic expert systems often improve performance by allowing knowledge to generalize without requiring the knowledge engineer to anticipate all possible situations. Thus, for many types of applications, soft computing such as Fuzzy logic can incur lower overhead in terms of representing and engineering task knowledge. Our project investigates the application of fuzzy expert systems to motion tracking. Previous research showed that Fuzzy Logic can be used to track the motion of a brightly colored object against a dark background, with relatively low development and run-time costs. The system we are developing identifies, tracks, and predicts the motion of multiple objects using unique identification patterns against a dark background. Our poster will describe the fuzzy inference systems for tracking and motion prediction of such objects. An essential step to obtaining the fuzzy inputs for the motion tracking fuzzy inference system is to use convolution correlation data to obtain the centers of mass of the objects. Image processing information from the region around the center of each object provides good fuzzy inputs for recognizing object patterns and determining orientation. We are investigating various fuzzy inference systems for motion tracking and prediction in order to identify their strengths and weaknesses.

## **SPATIAL ANALYSIS OF COLBY COLLEGE TRAILS: PERKINS ARBORETUM AND RUNNALS HILL**

**Jacqueline Rolleri ('06), Environmental Studies**

I created an updated map of trails at Colby College using global positioning system data that were then edited in ArcGIS. The map background, obtained from the Maine Office of GIS, was created from digital orthophotographs produced from aerial photos collected over southwest Maine in Spring 2003. Trail difficulty was determined by creating a slope layer and taking other factors into consideration such as ground surface and path width. The map will eventually be available online, enabling interactive selection of trails where users can access additional trail information.

## **SPECIFICITY AND AFFECTIVE VALENCE OF AUTOBIOGRAPHICAL MEMORIES IN DEPRESSION**

**Kathryn Rooney ('06), Psychology**

This study examines memory distortions relating to specificity and affective valence in the memory of depressed individuals. 31 non-depressed, and 29 depressed participants were brought into the lab on two occasions. On one occasion they were asked to write about four memories of events from their own lives, on the other, they were asked to write about events that happened to their family members. After the memories for specificity and affective valence were coded, tests showed that non-depressed participants were more specific in their events and talked about them with a positivity bias, whereas depressed participants wrote with less specificity and with more negatively charged words. Implications for the findings and future directions are discussed.

## **ESTIMATING THE IMPACT OF CATASTROPHIC SEA LEVEL RISE IN MAINE**

**Christopher Russoniello ('06), Randa Capponi ('06), Gregory LaShoto ('07) and Sharon McMonagle ('06), Environmental Studies**

Maine's 3,500 miles of coastline is the longest coastline in the continental US. The goal of our study was to use GIS to estimate the impact future global sea level rise could potentially have on our state. We show the area of coastline and some of the economic and social impacts that would result from a rise of one meter and six meters. We used roads to estimate the impact on infrastructure, and public building, including schools, libraries, hospitals, police and fire stations, as a measure of social impact. A sea level rise of six meters would result in a loss of over 650 km<sup>2</sup> from coastal communities and cost the state of Maine over 3 million in repaving costs. Through our study, we hope coastal communities will be able to prepare for and react to the predicted changes in global sea level.

## **SEASONAL FLUID FLUX THROUGH THE SERPENTINE BOG, BELGRADE LAKES REGION, MAINE**

**Christopher Russoniello ('06), Geology**

Wetlands serve as both sources and sinks for water and chemical species. As a result, quantifying the role wetlands play in watershed dynamics is important in assessing local, regional, and even

global water and chemical cycles on a variety of temporal scales. Of particular interest to those hoping to manage watersheds are seasonal-scale dynamics (on the order of months). Understanding the role wetlands play in a watershed may provide insight into how water moves through watersheds and how we might effectively manage both the water resources and water quality within watersheds. The Belgrade Lakes Watershed in south-central Maine (Fig. 1) provides an ideal opportunity for the investigation of the role wetlands play in watershed dynamics. The watershed is simple, but complex; manageable, but interesting. This study is part of a larger-scale attempt to understand and numerically model the hydrogeochemical dynamics of the entire Belgrade Lakes Watershed. My research has focused on a portion of the Serpentine Bog, which is located in the Northern Belgrade Lakes Watershed (Fig. 2), and lies between East and North Ponds. The primary goal of this project is to determine groundwater flux ( $Q$ ) through this corridor to test whether the bedrock ridges do confine ground-water flow to the peat and whether the flux through the peat can be numerically predicted as a function of recharge to the system. A simple 3-D numerical model of the corridor has been constructed and calibrated using groundwater and surface-water level data collected at high temporal resolution (hourly) from August 2005 to November 2006.

## **OMISSION AND COMISSION IN THE INACTION INERTIA PARADIGM**

### **Steen Sehnert ('06), Psychology**

Inaction inertia results when failing to act on an initial opportunity reduces the likelihood of taking a similar subsequent opportunity. Does a missed opportunity resulting from action cause different effects? Maybe not. In two scenario studies students missed an initial opportunity that was either slightly better (small difference) or much better (large difference) than a current opportunity. Participants were less likely to take the current opportunity in the large difference condition, replicating the inaction inertia effect. This effect was identical in both the inaction and action conditions, contrary to expectations based on previous research comparing action to inaction. Mediation roles and implications for three varieties of regret are discussed for their potential to explain inaction inertia as well as null action findings within this paradigm

## **THE PERCEPTIONS AND REALITIES OF PORNOGRAPHY ON COLBY COLLEGE CAMPUS**

### **Jessica Seymour ('06) and Elizabeth Wyckoff ('06), Women, Gender, Sexuality**

Inspired by readings and discussions from Lisa Arellano's Feminist Theory class, we created a survey that was made available to the Colby student population in order to explore the presence and effect of pornography on Colby's campus. Through our survey, we have attempted to determine how sexuality is defined as a result of the influence of certain types of pornography among this demographic. As a result, we have found that there exists a hidden discourse in relation to sex and pornography among college-aged men and women. We discovered a significant rift between the realities and perceptions of porn consumption that takes place on campus, as well as the real and perceived emotional responses to pornographic issues that were addressed in the survey. The disparities between male and female survey responses reflects the different ways that young men and women are currently being educated about sex, sexuality, and their bodies in today's society.

## **A LEADER'S PLACE IN REVOLUTION: HOW ONE INDIVIDUAL EMBODIES THE MANY VOICES OF DISSENT**

### **Lauren Simmons ('06), Anthropology**

Within a society the process of creating and maintaining power structures often operates to the disadvantage of one group and to the benefit of another. Everyday, civilians participate in power structures that operate to their disadvantage. Revolution is the summation of this disadvantaged group's dissent into verbal and physical resistance in order to create change. However, this change is motivated at specific time, and often, organized under the direction of a solitary voice. How is it, if these structures have been operating over an entire population, that one voice openly acknowledges the existing societal abuses and/or needs of which all individuals in the same position are more subtly experiencing? How do one person's ideas manage to be heard, and, how do they create a following?

## **MOBILIZED MOTHERS AND WOMEN WARRIORS: WOMEN'S POLITICAL PARTICIPATION IN SRI LANKA AND CHILE**

### **Laura Snider ('06), International Studies**

Though mobilizing the identity of mother or revolutionary woman is not a novel concept; in Sri Lanka and Chile, four distinct groups of women involved with separate political organizations defied their status as second-class citizens and challenged an oppressive state. In each country, one group of women took the acceptable path of non-violence and the other took the radical

path and used armed resistance to articulate their goals. Despite the fact that there was almost certainly no communication between the groups, each one developed along a strikingly similar course and was a crucial part in active resistance that eventually saw the downfall of their respective governments. In both countries and both organizations, they were drawn into an evolving negotiation of expectations of gender and political agency with respect to their roles in society and their protests. Above all, the notably similar paths these Sri Lankan and Chilean women forged as they challenged both state and patriarchal repression illustrates a common way in which these women became activists.

## **TRAVESTI RIGHTS ARE HUMAN RIGHTS**

### **Laura Snider ('06), Anthropology**

People—whether they identify as lesbian, gay, bisexual, transgender, transsexual, all-sexual, travesti, women-loving-women, man-loving-man, intersexed, Tom, Dee, n/dleeh, or heterosexual—have the right to have control over their bodies and to have autonomy over decisions related to their sexual life, and the right to engage in that sexual life free from discrimination, violence or coercion. Perhaps one of the most powerless groups whose rights have been systematically violated by judicial, police, and state authorities in addition to public condemnation are travestis. The complex travesti identity is beginning to take on legal and public significance as activists in Argentina and Chile have begun to form organizations to demand basic human rights for travestis.

## **RESPONSES TO PLAYBACK CALLS IN A BRAZILIAN TREEFROG: *SCINAX RIZIBILIS***

### **Colby Souders ('07), Biology**

Communication is essential to successful reproduction in many animals, and acoustic signals are an important avenue for conveying relevant information. Frogs exhibit remarkable diversity in acoustic signals, and typically use a broad repertoire of species-specific advertisement and aggressive calls. The advertisement calls of treefrogs in the genus *Scinax* have been well-studied and described, but other call types and the acoustic criteria used for mate attraction, mate choice, acoustic competition, and heterospecific discrimination have yet to be explored. One way to accomplish this is through playback experiments. Frogs respond readily to conspecific calls, and male frogs have been shown to respond to, and even their own modify vocalization patterns, conspecific calls broadcast to simulate a potential rival male. In this study, we tested the hypothesis that male *Scinax rizibilis*, which produce one of the most complex calls of any species in the genus, respond differentially to the different components of the advertisement call and to aggressive calls. These responses may be given to minimize energy expenditure or to maximize information transfer. Playback experiments were directed at calling males in the field; initial natural calling activity was recorded, a stimulus call was played, and the focal male's response was recorded. This procedure was repeated on the same individuals using different stimulus calls during each phase. Males responded immediately with a short aggressive call to all six stimulus call types, and continued to produce this call type for at least five minutes after the stimulus call.

## **OVERCONFIDENCE AFTER EXPOSURE TO MISLEADING POST-EVENT INFORMATION**

### **Rebecca Reisman ('06) and Meredith Stauffer ('06), Psychology**

Numerous studies have found that when presented with misleading post-event information, people often inaccurately remember originally witnessed events (see Ayers & Reder, 1998 for review). This effect, known as the misinformation effect, clearly demonstrates that individual's eyewitness memory can easily be compromised (Mudd & Govern, 2004). The goal of the present research was to examine conditions that might lead to a reduction in the misinformation effect. Utilizing the multiple testing procedure (Erdelyi & Becker, 1974), the present study examined whether subjects would be less susceptible to misleading post-event information if first given a memory test. Secondly, we investigated how confidence in answers would be affected by repeated testing and exposure to both correct and misleading post-event information. The findings demonstrate that repeated testing did not reduce the misinformation effect but instead increased the effect, suggesting that repeated testing does not inoculate one from the suggestive influences of post-event information. In addition, the relationship between confidence and accuracy was significantly better on Test 1, prior to misleading post-event information than on Test 2. Finally, participants' confidence in incorrect answers significantly increased following the presentation of misleading post-event information, which led them to change a correct response to an incorrect response that incorporated the misinformation. The results remind us of the fallibility of memory and that subjective confidence is not an error free determinate of accuracy.

## **ANALYSIS OF A PROXY OF SUICIDAL IDEATION IN THE MAINE YOUTH DRUG AND ALCOHOL USE SURVEY/YOUTH TOBACCO SURVEY**



**Chad Stecher ('08), Mathematics**

Determining the predictors of suicidal ideation within teenagers has been the focus of many psychology studies. These studies have typically concluded that females are more likely to think about suicide at a young age than males. This study analyzes the responses to a question about students' feeling of hopelessness in the Maine Youth Drug and Alcohol Use Survey/Youth Tobacco Survey. Using both the Mantel-Haenszel test for homogeneity of odds ratios with the Woolf weighting method and logistic regression to statistically analyze the data, this study will identify a complicating factor to the general conclusion of female suicidal ideation being higher than male suicidal ideation. In our analysis we found that females are more likely to identify themselves as having thought about suicide, but males are more likely to not respond. We also stratified across age and found a significant age effect. These results suggest that females are more willing to ask for help while males are not comfortable or willing to express their feelings. This should lead researchers and policy makers to pay equal attention to both males and females when trying to address the issue of suicidal ideation within today's adolescents.

**THE TAKING OF MAYFLOWER HILL: THE VIETNAM ANTIWAR MOVEMENT AT COLBY COLLEGE****Timothy Stenovec ('06), History**

Despite today's relatively apathetic student body, the college's remote location, and small size, Colby College had a remarkably active antiwar movement during the Vietnam War. In this project, I have sought to trace the movement's evolution from several individuals gathered outside of Miller Library standing in silent protest to the majority of students successfully shutting down the college in 1970. Using the New Left's anti-Establishment rhetoric as a vehicle for this analysis, I argue that the roots of Colby's antiwar movement lie in other social movements, namely the fight to end institutionalized racial and gender discrimination, as well as movements of a smaller scale to increase student rights on Mayflower Hill. Colby College's mission, firmly bound to the liberal arts tradition, also fostered an intellectual environment where students could freely question the Establishment. Finally, regarding Colby's lack of activism today despite American military operations in Iraq and Afghanistan, I conclude that popular culture has perpetuated myths and stereotypes that have successfully discourage us the aptly named Google Generation from becoming antiwarriors.

**BEN BUTLER AND THE WOMAN ORDER: HARD WAR DIPLOMACY OR INHUMANE TREATMENT OF THE CITIZENS OF NEW ORLEANS?****Nathaniel Stone ('06), History**

Ben Butler was branded with the nickname 'Beast' upon issuing the Woman Order in the captured Confederate city of New Orleans. The infamous order, as it came to be known in the South, proclaimed to the women of New Orleans behaving in a disrespectful manner that if those actions continued they would be treated as women of the street by Union soldiers. In my paper, I wanted to examine how the North reacted to this order. I am hoping to uncover whether the North felt justified in the way Butler acted or if they thought there was a certain line even their own commander could cross that was deemed unacceptable during the Civil War.

**THE RACIALIZATION OF FEMALE BODY IMAGE PERCEPTION IN THE UNITED STATES****Christina Terrell ('06), American Studies**

Within the American culture, there are distinct body types characteristic of each racial group. For dominant culture the preferred white body of small buttocks, small hips, small waist, and larger than proportional breast. However, the black body is in direct contradiction, as larger buttocks, larger hips, small waist, and proportional breasts are the ideal. The acceptance of this deviant body is easily traced back through the black church system and can be credited to the rich slave diet and the naturally large features of the African ancestry. While her naturally larger body, with emphasis on the hips and buttocks, is desirable to her peers, the black female body is exoticized and objectified by white male gaze and this degradation is imitated by black males. Currently, in what is becoming the Age of the Black Booty, black women have unwillingly lost ownership and control of their bodies. By looking at the representation of black female bodies in popular culture and texts presented from the black perspective and white perspective, we see the distinct differences in body type acceptability and desirability.

**RESTRAINT STRESS AND AGGRESSION IN FAMILIAR MICE (*MUS MUSCULUS*)****Rachel Terry ('07), Biology**

Restraint stress, which commonly occurs in the laboratory during certain procedures, induces increased levels of glucocorticoids, decreased food intake, hypoactivity and decreased aggressive

and defensive behavior. The goals of this study are to test the hypotheses that restrained mice will be subordinate and hypoactive toward an unstressed cagemate and that when no fasting occurred and the fasted, restrained mice will exhibit more dominance than non-fasted mice. Male mice were housed in pairs and preliminary observations established a baseline for all social behaviors. For the first experiment, the test mice were exposed to 30 minutes of restraint and reintroduced to their home cages with the other mouse twenty-four hours later and behaviors were recorded for 15 minutes. In experiment two, both test mice and cage-mate mice were deprived of food for 24 hours, starting when restraint stress was induced in the test mouse. When the test mouse was reintroduced into the home cage, a piece of food was placed in the cage and behaviors were observed for 15 minutes. There was no significant difference between the frequencies of dominance in the stressed and non-stressed mice. There was also no significant difference between frequencies of dominance between the fasted and non-fasted mice. There were significantly more incidences of dominance post-treatment in both stressed and non-stressed mice as compared to preliminary observations.

### **THE EFFECTS OF THE HERBICIDE ATRAZINE ON MALE FIDDLER CRAB (*UCA SPP.*) TERRITORY DEFENCE AND AGGRESSION**

**Rachel Terry ('07), Biology**

Atrazine is an herbicide that targets monocot crops such as corn and sorghum, and is the most heavily used pesticide in the world today. Atrazine is a known endocrine disrupter, having specific effects on vertebrate testosterone, leading to reduced testosterone levels, feminization, and in some cases, hermaphroditism. Although much work has focused on amphibians and mammals exposed to atrazine, relatively little has been done to test the effects of the herbicide on crustaceans. In the present study, fifteen adult male fiddler crabs (*Uca pugnator*) were each provided with a private tank and artificial burrow and allowed to acclimate as tank residents. An additional fifteen crabs were housed in smaller tanks with no burrow, and were termed intruders. Intruder crabs were placed in the resident tanks, and aggressive interactions were noted. Ecologically relevant atrazine concentrations of 0.5 ug/l, 1ug/l and 2 ug/l were then added to the resident tanks. Intruders were again introduced to each tank, and the behavioral interactions were again observed. It is hypothesized that fiddler crabs exposed to atrazine will display less aggression toward intruders as a result of reduction in production and binding of vertebrate-like androgens.

### **THE ROLE OF HOME EQUITY IN RETIREMENT SAVING: BUILDING YOUR NEST (EGG)**

**Caroline Theoharides ('06), Economics**

This study examines the role of home equity in retirement saving. Previous work on home equity has not specifically dealt with retirement saving and is confined to data from the late 1980s. Using data from the 2001 and 2003 Panel Study of Income Dynamics, this study first updates the existing literature by regressing active saving on real housing capital gains using median regression techniques. Consistent with theory, an increase in housing capital gains results in a decrease in active saving. In order to deal more specifically with retirement saving, a level of retirement saving is regressed on home equity, yielding a positive relationship. Finally, a share variable is created by dividing home equity by retirement saving plus home equity. This variable enables a closer look at portfolio allocation decisions with regards to the home. When retirement savings are regressed on this share variable, the resulting relationship is negative, indicating that when households place more emphasis on the home in the retirement portfolio, they reduce the level of other retirement savings.

### **RESIDENTIAL ENVIRONMENTAL DESIGN: 'A HOUSE FOR AN ECOLOGIST' DESIGN COMPETITION ENTRY**

**James Thompson ('06), Art**

This architectural design project was entered into a design competition sponsored by the American Institute of Architects entitled "A House for an Ecologist". The primary purpose of the competition was to merge the notions of sustainable design and design excellence. Placed on a site in rural West Virginia along the Potomac River, the program calls for a residence for an ecologist working for the U.S. Department of Fish and Wildlife. Following the design criteria which provided specific site and program constraints, a design was developed incorporating several sustainable architecture practices of the vernacular. One of the chief efforts of the design was to limit the environmental impact during construction, during use, and following demolition. This dictated many important decisions including the house's placement, orientation, form, materials, construction, and mechanical systems. The result is a home that functions self-sufficiently with a low impact on its surroundings. Furthermore, the structure is socially sustainable as it relates to its region's architecture through its basic form and local construction methods.

**RELIGION AND HAPPINESS AMONG CHINA'S OLDEST-OLD****Brian Tierney ('06), Economics**

This paper analyzes the effect of religion on an individuals' self-perceived quality of life among the oldest-old in China. Previous studies have found religion to have significant and positive effects on individuals' well-being. However, these studies have primarily focused on Western societies and on younger people. Using Probit and Ordered Probit models, this paper finds that religion does not have a positive effect on self-perceived quality of life, and that in fact the relationship may even be negative. These findings suggest that the relationship between religion and well-being may be different among the most elderly populations and in societies with predominantly Eastern religious traditions.

**BE THE CHANGE YOU WISH TO SEE: NATIONAL ATTITUDES AND CLIMATE CHANGE POLICY****B. Tjernstrom ('06), Economics**

A multitude of views characterize what should or should not be done about climate change, and in the past decades, nations have acted very differently in the face of climate change. This study explores variables that affect individuals' attitudes and concerns towards the environment and how those attitudes ultimately affect climate change policy. One model identifies a number of political, socio-economic and demographic characteristics that matter for people's attitudes towards climate change. A second model investigates the link between individual attitudes and countries' actions on climate change, and the results show that attitudes indeed matter in the implementation of policy. Different measures of democracy such as freedom of the press also prove to be important as channels for these attitudes.

**NOMAD'S LAND - PARKS PROTECTION IN MONGOLIA: STRUCTURAL AND HUMAN OBSTACLES****B. Tjernstrom ('06), Economics**

In Mongolia, steppe ecosystems, mountains, taiga forests, and vast deserts interconnect. These diverse and fragile ecosystems exist closer to each other, and in healthier states, in Mongolia than anywhere else. Nature has been important in Mongolia since the time of Chinggis Khan's environmental laws in the 13th century. The past few decades, however, have a very mixed record. On the one hand, industrial excesses have led to severe ecological and environmental damage. On the other hand, concerns about rising environmental pressures have placed more than 13% of the country's landmass under special protection. The Mongolian government has announced a long-term goal of giving protected-area status to at least 30% of the country. This research was conducted in Mongolia during the summer of 2005, and identifies problems that Mongolia encounters in connection with this ambitious task. The paper introduces the aims and structures of the national park system, and examines its main administrative issues: a lack of resources, unclear legal structures, and the difficulty of disseminating information in a vast nomadic country. The interplay of the traditional Mongolian nomadic lifestyle, external economic advice, and Western conservationist goals is also scrutinized, and the results put into question Western conservationist principles.

**OVEREXPRESSION AND PURIFICATION OF THE OAT (AVENA FATUA) PROTEIN AFN1 AND CONSTRUCTION OF A PMAL/AFN1 EXPRESSION PLASMID****Tenzin Tsewang ('07), Biology**

Abscisic acid (ABA) is an important phytohormone with regulatory roles in many physiological processes. ABA expression is induced by environmental stresses such as drought and it is known to be an inhibitor of seed germination. A wild oat (*Avena fatua*) called AFN1 has been hypothesized to initiate the early stages of germination as its mRNA accumulates in nondormant seed embryos during imbibition. The polypeptide sequence of AFN1 suggests that it is an ABA glucosyl transferase. Glucosylation by AFN1 and thereby inactivation of ABA could lead to seed germination. In order to understand the role of AFN1 in germination, an ample quantity of AFN1 polypeptide is needed to test for enzymatic ABA glucosylase activity. My work has been to overexpress recombinant AFN1 containing a (His)<sub>6</sub> tag using a pRSETC E.coli expression system followed by purification of the AFN1 protein by means of a nickel-affinity column that bind to the (His)<sub>6</sub> tag. Due to the insufficient yield of AFN1 fusion protein obtained with this procedure, another method using a pMAL-c2x vector is now being employed. The pMAL expression system provides a method for expressing and purifying protein by tagging proteins with maltose-binding protein (MBP). It is anticipated that MBP tag will be advantageous as it can make the fusion protein more soluble and thereby yield a larger quantity of protein. Currently, work is underway on the construction of pMAL/AFN1 plasmid.

## **ISOLATION AND CHARACTERIZATION OF MERCURY AND ANTIBIOTIC RESISTANT BACTERIAL STRAINS FROM ATLANTIC SALMON, *SALMO SALAR***

**Elizabeth Turner ('06), Emily McClure ('07) and Emily Mosites ('06), Biology**

Environmental mercury from non-point sources has been theorized to be indirectly selecting for increased bacterial antibiotic resistance in many diverse habitats in Maine and New England. Studies involving bacterial isolates of Atlantic Salmon, *Salmo salar*, from Casco hatcheries were conducted in order to characterize the mercury and antibiotic resistance profiles of indigenous microflora. There is no history of antimicrobial chemotherapy at these hatcheries. Seventeen culturable isolates were collected from each of three fish, both from the external slime scraped from the epidermis, as well as the ingesta from the large intestine. The isolates were plated on trypticase soy agar (TSA) plating media amended with inorganic mercuric chloride ( $\text{HgCl}_2$ ; 0 - 250  $\mu\text{M}$ ) and organic phenylmercuric acetate (PMA; 0 - 16  $\mu\text{M}$ ). Plates of each isolate and each concentration were incubated at 6 $^\circ\text{C}$ , 12 $^\circ\text{C}$ , 18 $^\circ\text{C}$ , and 22 $^\circ\text{C}$ . All samples exhibited significant growth on high levels of PMA and most exhibited significant growth on high levels of  $\text{HgCl}_2$ . Isolates were identified phylogenetically using 16S ribosomal DNA sequencing techniques. Out of the eight ingesta samples, six were identified as *Aeromonas salmonicida*, as well as five out of the nine slime samples. Species of *Pseudomonas*, *Acinetobacter*, and *Carnobacterium* were also identified. *Aeromonas salmonicida*, a punitive pathogen of *Salmo salar*, exhibited maximal antibiotic resistance to 16 antimicrobials out of a total of 22 assayed.

## **CATALYZING CHANGE: TOWARDS ACCELERATED AND EXPANDED U.S.-EU-RUSSIAN ACTION TO REDUCE THE THREAT OF NUCLEAR TERRORISM**

**Jessica Varnum ('06), Government**

On September 11, 2001, Islamist terrorism became the defining threat of the new security order. Despite expert consensus that Islamist terrorists are actively seeking nuclear weapons and would not hesitate to use them, 9/11 and subsequent terrorist attacks have catalyzed only limited changes in U.S.-EU-Russian cooperation to address the threat of nuclear terrorism through programs to secure vulnerable nuclear materials and weapons at the source. Unfortunately, these vital programs have run into major constraints, including insufficient elite support and lingering Cold War suspicions. Historically catalytic events, defined as disasters or crises, have spurred states to support more cooperative policies by increasing their sense of the urgency of particular threats. While 9/11 and subsequent terrorist attacks did lead the U.S., the EU, and Russia to overcome some of the constraints to accelerated and expanded nuclear threat reduction efforts, they did not precipitate truly dramatic changes of policy. In explicating the degree to which these attacks overcame pre-9/11 program constraints, this thesis will seek to explain why they failed to lead to a strengthening of cooperation commensurate with the nature of the threat. Analysis of key national and intergovernmental program constraints pre- and post-9/11 demonstrates that the primary limitation of catalytic events vis-à-vis nuclear threat reduction has been the inability of elites to make the right conceptual linkages (e.g. between nuclear terrorism and threat reduction programs). I suggest that advocacy efforts can positively harness the power of catalytic events by helping elites to make conceptual linkages that will lead them to support accelerated and expanded cooperative action to prevent nuclear terrorism at the source.

## **PREPARATION FOR PROTEIN EXPRESSION STUDIES ON THE WHEAT GRAIN PKABA1-INTERACTING PROTEIN TAWD40**

**Natalie Wayne ('06), Biology**

Absciscic acid (ABA)-mediated gene expression is a critical component of plant responses to this important hormone, which affects plant growth, development, and responses to environmental stresses. Plant responses to ABA are mediated by a number of factors including PKABA1, an ABA-induced protein kinase involved in ABA-suppressed gene expression in cereal grains, and TawD40, which has previously been shown to physically interact with PKABA1. A full-length 1.9 kb TawD40 cDNA, CK210682, was sequenced as part of this project. Based on the deduced protein sequence, it is thought that TawD40 may belong to the family of E3 ubiquitin ligases, possibly targeting PKABA1 for destruction. Construction of expression plasmids for overproduction of the TawD40 polypeptide in *E. coli* is currently underway. The TawD40 cDNA has been successfully amplified from the source plasmid and inserted into an intermediate plasmid, pCR2.1. The TawD40 cDNA is currently being cloned from the pCR2.1 intermediate plasmid into two different expression vectors, pRSET-A and pMAL-c2x, for future protein production and purification.

## **ANALYSIS AND INTERPRETATION OF A TRIASSIC-AGED REEF COMPLEX, WALLOWA TERRANE, NORTHEASTERN OREGON**

**Samuel Weeks ('06), Geology**

The Triassic-aged outcrop of Martin Bridge Formation at Summit Point (near Halfway, Oregon) is

indicative of shallow carbonate deposition on the flanks of an ancient volcanic island arc system, known as the Wallowa terrane. Microfacies analysis of hand samples resulted in the identification of three depositional environments at the locality. The first, characterized by bedded marl-like limestones, reflects deposition at the interface of a near-reef shelf and a shallow subtidal slope environment. The second, characterized by bioclastic wackestones and in situ sponge, coral, algal, and spongiomorph framestones, is a central- and flank-reef complex, considered to be the result of sea-level regression. Spatially and temporally distributed patch reefs, ranging from 1 to 7 m in height and 5 to 30 m in length, constitute the framework. The third depositional environment, characterized by a coarse neomorphic micrite, suggests sedimentation during a transgressive cycle on a distal subtidal slope. Statistical analysis of the paleontology reveals that the invertebrates occur in a determined rank order of sponges, corals, and algae, similar to other Norian-aged reefs, including ones in the Alps and at Lime Peak in the Yukon.

## **THE NEWSPAPER REDESIGN PROJECT**

### **Steven Weinberg ('06), Art**

Imagine a story such as the recent controversy over the Maine human rights law concerning homosexuals as a line. Along this line there are points, or specific events. Newspaper articles often capture these events, giving the reader a momentary understanding of the news. This redesign tries to tackle the impossibility of understanding the timeline through only the selective points (newspaper articles) provide. I have taken Michael Heath, director of the Christian Civic League and vociferous opponent to the human rights law, to allow for this recontextualizing of the news. Through his comments, I have reconstructed what was a year of events into a small book. Follow the ebb and flow of of an innumerable people's actions by one man's words and attributed actions. Is it possible?

## **WHAT IS THE ROLE OF SEED BANKS IN PRESERVING BIODIVERSITY?**

### **Kerry Whittaker ('08), Joel Alex ('08) and Sarah Hoskinson ('06), Environmental Studies**

Seed banks are a collection of seeds, preserved in a viable state, used for future conservation, agricultural, and genetic purposes. Seed banks have a role in ex situ conservation of endangered plants, conservation of crop and genetic diversity, and as a useful tool in scientific research and poverty mitigation. For example, the Center for Plant Conservation has been active in the preservation of seeds for conservation. The Millennium Seed Bank is used as a genetic base of seed evolution for future research. The Israel Gene Bank has been used for preservation of seeds for agricultural diversity. The Zambian Program Against Malnutrition has used seed banks for the mitigation of poverty and to increase nutritional variation in the local communities. As a relatively new tool, more research is needed to assess their effectiveness and identify the associated benefits and challenges of seed banks.

## **ANALYZING THE DETERMINANTS OF OBESITY IN MAINE**

### **Jonathan Wong ('06), Economics**

America's obesity epidemic has garnered much attention in recent years, with 65% of adults either overweight or obese in 2002. This paper analyzes the possible determinants of obesity in Maine using data from the 2001 to 2003 Behavioral Risk Factor Surveillance System. Other works have focused on obesity on the national level without focusing on individual states. Variables such as income, education, and marital status were considered, with binary year variables. Individual effects of the determinants will be discussed, as well as potential policy implications.

## **MICROBIAL MERCURY AND ANTIBIOTIC RESISTANCE IN THE SOIL SYSTEMS OF AVERY PEAK, MAINE**

### **Victoria Work ('08) and Lee Kozakiewicz ('07), Biology**

In Maine, the presence of mercury in otherwise pristine ecosystems comes from emissions released into the air by industries in the Midwest. Carried by the jetstream, mercury is deposited over the Northeast via precipitation. Contamination by mercury in aquatic systems has been widely studied, but only recently has research focused on mercury's impact in terrestrial systems. Previous and ongoing research in this laboratory has both studied mercury and antibiotic resistance in the microbial flora of salmonid gastrointestinal tracts, and has shown a distinct linkage of genes for mercury resistance with those for antibiotic resistance on mobile genetic elements. This correlation, perpetuated by horizontal gene transfer, is the basis for this parallel study in soil systems, an environment rich in microbial diversity. The objective of this study was to characterize bacterial isolates obtained from five separate locations on Avery Peak in northwestern Maine. Serial dilutions of five-gram portions of each sample were plated onto trypticase soy agar plates amended with 0, 25, or 50  $\mu$ M HgCl<sub>2</sub>. Morphologically unique colonies were isolated and characterized by their 16S ribosomal DNA sequences. Resistance to both antibiotics and synthetic

antimicrobial compounds was observed using Sensititre minimum inhibitory concentration assays. Several of the isolates represent *Bacillus* and *Pseudomonas* genera, as well as *Microbacterium* and *Rahnella*. Particularly high antibiotic resistance was seen in a *Stenotrophomonas* isolate, which showed maximal resistance to 17 different antibiotics. A *Pseudomonas* relative, the *Stenotrophomonas* species *maltophilia* has been identified as a human pathogen. Several gram-positive isolates showed reduced levels of resistance, with maximal resistance to one or two antibiotics.

### **EPICHLOROHYDRIN CROSS-LINKING OF SYNTHETIC DNA OLIGOMERS**

#### **Rami Zahran ('06), Chemistry**

Epichlorohydrin (ECH), an important chemical in the synthetic polymer industry, is a bifunctional alkylating agent with the potential to form DNA interstrand cross-links. Occupational exposure to this suspect carcinogen leads to chromosomal aberrations, and ECH has been shown to undergo reaction with DNA in vivo and in vitro. We are using denaturing polyacrylamide gel electrophoresis to assess cross-linking of synthetic DNA oligomers by both ECH and the related compound, epibromohydrin (EBH). Both epihalohydrins produce a low-mobility band on denaturing gels consistent with an interstrand cross-link. Moreover, the efficiencies, sequence preferences, reaction kinetics, and pH dependence differ for the two compounds, suggesting different mechanisms of reaction. Understanding these alkylation reactions may help explain the role of the epihalohydrins in cancer development.

### **MONITORING THE HEALING TIME OF BAITFISH WITH SKIN ULCERATIONS USING FLUORESCCEIN**

#### **Courtney Zecher ('06), Biology**

Baitfish quality concerns both bait dealers and the anglers buying bait. Baitfish may grossly appear to be healthy, but may have a damaged epithelial layer, leaving fish vulnerable to osmotic stress and infection. The ability to detect epithelial lesions before gross fungal or bacterial infections occur could prevent morbidity and mortality in many species. Fluorescein (3,6-dihydrospiro [isobenzofuran-1(3H),9-[9H]xanthen]-3-one) sodium is a yellow, nonlethal dye which penetrates any break in the epithelium and shines an intense green color under UV light. In this experiment, we measured the healing time of a manually debrided area for six fish species, brook trout (*Salvelinus fontinalis*), rainbow smelt (*Osmerus mordax*), white suckers (*Catostomus commersoni*), fathead minnows (*Pimephales promelas*), emerald shiners (*Notropis atherinoides*) and golden shiners (*Notemigonus crysoleucas*). Fish were anesthetized, scraped with a scalpel blade and recovered in aerated coolers. At 24-hour intervals over 96 hours, fish were anesthetized in a fluorescein solution for 6 minutes, rinsed in clean tap water, and examined under UV light; select fish were photographed. Lesions were considered healed when they no longer fluoresced. Rainbow smelt were extremely sensitive to handling and debriding, and all died before the experiment was complete; many of the white suckers healed within 72 hours. The other four species healed within 96 hours with lesions progressively decreasing in size and fluorescence. In some instances, there was visible damage after 96 hours, such as scales missing, but the area had ceased to fluoresce, suggesting that the protective epithelial barrier grew back before the scales. Fluorescein is an effective means of assessing the epithelial condition of baitfishes.

### **PILOT ANALYSIS OF GRAY FOX, *UROCYON CINEREOARGENTEUS*, MAJOR HISTOCOMPATIBILITY COMPLEX (MHC)**

#### **Courtney Zecher ('06), Biology**

Heartworm disease is a common affliction throughout the family Canidae and yet gray foxes, *Urocyon cinereoargenteus*, are resistant to the parasite. Our hypothesis is that the resistance of gray foxes to heartworm lies in the major histocompatibility complex (MHC) and sequence variation that might exist among gray fox and other canids. This has been shown in hairy-footed gerbils in which there is a correlation between certain alleles of DRB exon 2 gene and a decrease in cestode and nematode load. Samples of gray fox along the East Coast including South Carolina, New Hampshire, Vermont and New York were amplified at a class II MHC gene (DRB1), exon 2. The amplification products were then sequenced and analyzed. MHC sequencing thus far has proved to be a difficult endeavor and we currently have not produced results about which we are confident and satisfied. However, we have compared published MHC sequences of coyotes (*Canis latrans*), gray wolves (*Canis lupus*), dogs (*Canis familiaris*) and island fox (*Urocyon littoralis*). Island fox exhibit unique mutations in their MHC not seen in the coyote, wolves and dogs, suggesting that we might be able to find similar sequence differences in gray foxes that we can associate with resistance to heartworm disease.

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**Research Symposium**

# ***Colby Undergraduate Research Symposium 2006***

***May 3-5, Colby College, Waterville, Maine***

***Keynote Address - Dr. Robert D. Bullard  
May 3, 7:30 pm Olin 1***

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Judem, Emily S. ('06)	American Studies	McFadden, Margaret T.	
<b>Examining the Assimilation of Jews in America</b>			:
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<b>Exploring Opportunity in America: Immigrant Entrepreneurship and Rags to Riches Success</b>			:
Fagan, Kara E. ('06)	American Studies	McFadden, Margaret T.	
<b>Gender and Class in the Films of Barbara Stanwyck</b>			:
Downs, Chelsea E. ('06)	American Studies	McFadden, Margaret T.	
<b>Education Through Imagery and the Power of MTV</b>			:
Hamm, Katherine E. ('06)	American Studies	McFadden, Margaret T.	
<b>The Connection of Women Rock Musicians and the Image of Feminism</b>			:
		Margaret T.	Hurd



Jairus Steed ('06)	American Studies	McFadden	Room
<b>Blue-eyed Soul in the 21st Century: African-American Influence on Popular American Music</b>			May 4
Christina Terrell ('06)	American Studies / Women, Gender, Sexuality	Margaret T. McFadden	Hurd Room
<b>The Racialization of Female Body Image Perception in the United States</b>			May 4
Tyler Hales ('06)	American Studies	Alec D. Campbell	Hurd Room
<b>Is Baseball Still America's National Pastime, or has Football Become the All-American Sport?</b>			May 5
Noah Balazs ('06)	American Studies	Margaret T. McFadden	Hurd Room
<b>iDentity: Constructing Identity in a Mass Mediated and Postmodern Society</b>			May 5
Simmons, Lauren J. ('06)	Anthropology	Besteman, Catherine L.	
<b>Ethnic Violence and Protracted Social Conflict</b>			:
Jessica Moore ('07)	Anthropology	Catherine L. Besteman	Whitney Room
<b>The Little White Lie That Could Save the World</b>			May 3
Meredith, Matthew M. ('06)	Biology	Fekete, Frank A.	
<b>Characterization of Oxacillin Resistance Determinants and the Conjugal Transfer Thereof in Gram Positive Salmonid GI Tract Bacterial Isolates</b>			:
Itter, Malcolm S. ('07)	Biology	Stone, Judy L.	
<b>Ecological Interactions in the Succession of Northern Hardwood Forests</b>			:
Natalie Wayne ('06)	Biology	Russell R. Johnson	
<b>Preparation for Protein Expression Studies on the Wheat Grain PKABA1-Interacting Protein TaWD40</b>			:
Sarah Hoskinson ('06)	Biology	Judy L. Stone	Olin Room 1
<b>A Comparison of Forest Type Resilience to Structural and Compositional Changes Following Beech Bark Disease Infestation</b>			May 5
David Civitello ('06)	Biology	Stacey L. Lance	Olin Room 1
<b>Genetic Breeding System of Gray Fox, <i>Urocyon cinereoargenteus</i>, in a Protected Population</b>			May 5
Erin Parry ('06)	Biology	Frank A. Fekete	Olin Room 1
<b>Mercury Resistance in a Multi-Drug Resistant Strain of the Fish Pathogen, <i>Aeromonas salmonicida</i></b>			May 5

Matthew Aschaffenburg ('06)	Biology	Catherine R. Bevier	Olin Room 1
<b>The Impact of Trait-Mediated Effects on Predator-Prey Interactions in the Rocky Intertidal Community</b>			May 5
Zorba, Adelajda ('06)	Chemistry	Thamattoor, Dasan M.	
<b>Natural Product Synthesis</b>			:
Kim, Michelle S. ('06)	Chemistry	Conry, Rebecca R.	
<b>Organometallic Synthesis</b>			:
Boyle, Lindsey T. ('06)	Chemistry	King, D. Whitney	
<b>Photochemical Production of Superoxide in Natural Waters</b>			:
Wayne, Natalie A. ('06)	Chemistry	Johnson, Russell R.	
<b>Protein Expression Studies for the PKABA1-Interacting Protein TaWD40</b>			:
Kwabi, Christabel A. ('06)	Chemistry	Thamattoor, Dasan M.	
<b>Synthesis of Psammaplysene A</b>			:
Aaron Bradford ('07)	Chemistry	Kevin P. Rice	
<b>Effects of Carbamoylation from Anticancer Sulfonylhydrazines on Homologous Recombination DNA Repair</b>			:
Daniel Fowler ('06)	Chemistry	Frederick LaRiviere	
<b>Investigating the Mechanism of a Novel Ribosomal RNA Degradation Pathway</b>			:
Geller, Bram J. ('06)	Chemistry	Katz, Jeffrey L.	
<b>Synthesis and Functionalization of Oxacalixarenes</b>			:
Hui Kim ('06)	Chemistry	Dasan M. Thamattoor	
<b>Synthesis and Structure of Novel Polyphenylene Macrocycles</b>			:
Mwai, Nicholas K. ('06)	Computer Science	Smith, Marc L.	
<b>Creation of a Wiki Based Code Repository</b>			:
Chan, Ka Yee (Jessica) ('06)	East Asian Studies	Prindle, Tamae K.	
<b>Liminal Literature: Haruki Murakami's Fictional World</b>			:
D'Sousa, Adil J. ('06)	East Asian Studies	Besio, Kimberly A.	
<b>The Family Novel in the Emerging Nation-State: A Comparative Study of Ba Jin's Jia and Lev Tolstoy's Anna Karenina</b>			:

Ippolito, Peter S. S. ('06)	Economics		
<b>The Effect of Mafia Presence on Tourism in Italy</b>			:
Jessica Minty ('06)	Economics		Smith Room
<b>Media Coverage and Disaster Relief</b>			May 5
Caroline Theoharides ('06)	Economics	Michael R. Donihue	Smith Room
<b>The Role of Home Equity in Retirement Saving: Building Your Nest (Egg)</b>			May 5 45
Emily Brostek ('06)	Education and Human Development	Mark B. Tappan	Whitney Room
<b>◆The Kind of Person I Am:◆ Reassessing the Aims of Community Service and Its Impact on College Students Through Identity Development</b>			May 4
McLaughlin, James O. ('06)	English	Roy, Anindyo	
<b>A Comparative Study of Travel Narratives</b>			:
Amendola, Rebecca F. ('06)	English	Narin van Court, Elisa M.	
<b>A League of Their Own: Jewish-American Competition in Philip Roth's American Arena</b>			:
Thermansen, Eleanor J. ('06)	English	Onion, Patricia A.	
<b>Asserting Individualism: Sexual Politics and the Evolution of Adrienne Rich</b>			:
Spanich, Ryan K. ('06)	English	Bryant, Cedric Gael	
<b>Blurring Gender Roles in the Contemporary Romantic Novel: Is this the Prescription for True Love?</b>			:
Jones-Pierce, Ashley V. ('06)	English	Onion, Patricia A.	
<b>Contemporary Native American Poetry</b>			:
Tull, Emily R. ('06)	English	Osborne, Laurie E.	
<b>Gender Response Poetry: How the Female Poet Reacts to Male Dominated Society and the Lack of Female Writers in the Cannon</b>			:
Wyckoff, Elizabeth A. ('06)	English	Boylan, Jennifer Finney	
<b>Ladies and Gentlemen, Boys and Girls: A Collection of Short Stories</b>			:
Downs, Travis B. ('06)	English	Blevins, Adrian	
<b>Lies, Half-Truths, and Flashes of Brilliance: Creating Narrative Poetry</b>			:
Allen, Emily E. ('06)	English	Boylan, Jennifer	

		Finney	
<b>Memory and Imagination: A Collection of Short Fiction and Memoir</b>			:
Coulson, Emilie L. ('06)	English	Harris, Peter B.	
<b>Northern Door Poems</b>			:
Morrison, Matthew A. ('06)	English	Contreras, Daniel	
<b>Reality: An Introduction</b>			:
Markos, Melina C. ('06)	English	Stubbs, Katherine M.	
<b>Recognition and Cultivation of Taste: Influences of Culture, Gender and Literature</b>			:
Chin, Marissa T. Y. ('06)	English	Suchoff, David B.	
<b>Religion in the Novels and Plays of Samuel Beckett</b>			:
Woodward, Lauren A. ('06)	English	Bryant, Cedric Gael	
<b>The Burden of Consciousness and Conscience: Memory and Alienation in Selected Works of William Faulkner and Toni Morrison</b>			:
O'Brien, Michael W. ('06)	English	Contreras, Daniel	
<b>The Hollywood Blockbuster in Postmodern America</b>			:
Stark, Samuel B. ('06)	English	Contreras, Daniel	
<b>The Phenomenological Gaze, Infinite Jest, and the Deconstructive Impulse</b>			:
Rhoda, Erin R. ('06)	English	Mazzeo, Tilar J.	
<b>Transformation through Imagination: The Poetry of John Keats</b>			:
Gullette, Russell A. ('06)	English	Contreras, Daniel	
<b>Writing Abstract Expressionism: History, Politics, Art</b>			:
Rosenfeld, Julia M. ('06)	English	Mannocchi, Phyllis F.	
<b>Modern Interpretations of Virginia Woolf's Mrs. Dalloway</b>			:
Erica Dorpalen ('06)	English	Peter B. Harris	Whitney Room
<b>Carry Emptiness: The Ecology and Zen Buddhism of Gary Snyder's Poetry</b>			May 4
Kara McCabe ('06)	English	Cedric Gael Bryant	Smith Room
<b>A Journey Through Memory and Self in the Works of Edwidge Danticat and Julia Alvarez</b>			May 3

Kelly, Sarah H. ('06)	Environmental Studies	Cole, F. Russell	
<b>Dorm Energy Use by Colby Students</b>			:
Jenna Morrison ('06)	Environmental Studies	F. Russell Cole	Hurd Room
<b>Environmental Awareness of Waterville Junior High Students</b>			May 5
Alexandra Jospe ('06)	Environmental Studies	Philip Nyhus	Hurd Room
<b>Modeling Spatially Explicit Human-wildlife Conflict: GIS and Moose-vehicle Collisions in Maine</b>			May 5
Hilary Langer ('06)	Environmental Studies	James L.A. Webb	Hurd Room
<b>The Cost of Conservation: Payments for Environmental Services on The Osa Peninsula, Costa Rica</b>			May 5
Curtis, Katherine E. ('06)	Geology	Shosa, Jennifer D.	
<b>Building a Numerical Model of the Belgrade Lakes Watershed</b>			:
Christopher Russoniello ('06)	Geology	Jennifer D. Shosa	
<b>Seasonal Fluid Flux Through the Serpentine Bog, Belgrade Lakes Region, Maine</b>			:
Smithwood, R. Brandon ('06)	Government	Botcheva-Andonova, Liliana	
<b>Budget Cuts and the Public Response</b>			:
Parise, Brian V. ('06)	Government	Mackenzie, G. Calvin	
<b>School Choice and Public Education</b>			:
Deheeger, Michael J. ('07)	Government	Armony, Ariel C.	
<b>Strength and Relevance of Burmese Constitutional Drafting Process</b>			:
Jessica Varum ('06)	Government	Kenneth A. Rodman	Smith Room
<b>Catalyzing Change: Towards Accelerated and Expanded U.S.-EU-Russian Action to Reduce the Threat of Nuclear Terrorism</b>			May 3 30 minutes
Rausch, Drew M. ('06)	History	Scheck, Raffael M.	
<b>Breaking the Stalemate: The American Expeditionary Force at Belleau Wood</b>			:
Malkin, Julia R. ('06)	History	Opal, Jason M.	
<b>Democracy at Home and Abroad: The D-R Societies and American Foreign Policy, 1787-1800</b>			:
Jonathan Ashcroft ('06)	History	Paul R. Josephson	Whitney Room

<b>British and French Intelligence on the German Question and the Growth of Pacifist Movements</b>			May 4
Courtney Kubilis ('06)	History	Paul R. Josephson	Whitney Room
<b>Space Age Learning: Education Reform in the USSR and USA in the Age of Sputnik</b>			May 4
Katie Fuller ('06)	History	Paul R. Josephson	Whitney Room
<b>Spinners and Losers: Lewiston's Irish and French-Canadian Immigrants 1850-1930</b>			May 4
Timothy Stenovec ('06)	History	Robert S. Weisbrot	Whitney Room
<b>The Taking of Mayflower Hill: the Vietnam Antiwar Movement at Colby College</b>			May 4
Chelsea Downs ('06)	Independent Studies / American Studies	Margaret T. McFadden	Hurd Room
<b>The Economics of Hip Hop Culture -- More Than Music</b>			May 5
Schleck, Sarah J. ('06)	International Studies	Besio, Kimberly A.	
<b>The Role of the Catholic Church within Transitional Chinese Society</b>			:
Laura Snider ('06)	International Studies / Anthropology	Ben W. Fallaw	Whitney Room
<b>Mobilized Mothers and Women Warriors: Women's Political Participation in Sri Lanka and Chile</b>			May 5
Planas, Stephen W. ('06)	Music	Saunders, Steven E.	
<b>Carl Maria von Weber's Overture to Oberon: A Performance History</b>			:
Bertholf, Garry J. ('06)	Music	Machlin, Paul S.	
<b>John Coltrane: Jazz Improvisation, Transcription, and Performance</b>			:
Brostek, Emily R. ('06)	Philosophy	Gordon, Jill P.	
<b>Morality, Ethics and Poverty</b>			:
Gregory Lusk ('06)	Philosophy	Daniel H. Cohen	Smith Room
<b>Virtue Epistemology: Rethinking the Presuppositions of Knowledge</b>			May 3
Zheng, Mao ('06)	Physics	Tate, Duncan A.	
<b>Data Acquisition System for Cold Rydberg Atom Experiments</b>			:
Fung, Shu-Hong ('06)	Physics	Bluhm, Robert T., Jr.	
<b>Vector Theory of Spontaneous Lorentz Violation</b>			:

Katharine Gilroy ('06)	Psychology	Jennifer R. Yates	Whitney Room
<b>MP and 6CI-tryptophan Administered to Attenuate Secondary Pathology in Guinea Pig Spinal Cord Injury</b>			May 5
Steen Sehnert ('06)	Psychology	Thane S. Pittman	Whitney Room
<b>Omission and Commission in the Inaction Inertia Paradigm</b>			May 5
Gabrielle Adams ('06)	Psychology	Thane S. Pittman	Whitney Room
<b>Time, Remorse, Compensation, and Reparations</b>			May 5
Kathryn Rooney ('06)	Psychology	Yulia Chentsova Dutton	Whitney Room
<b>Specificity and Affective Valence of Autobiographical Memories in Depression</b>			May 5 30 minutes
Robert Redwood ('06)	Religious Studies	Campbell, Debra	
<b>The Appalachian Trail: A Spiritual Pilgrimage in America</b>			:
Ostberg, Mary C. ('06)	Sociology	Campbell, Alec D.	
<b>The Effects of Societal Gender Values and Stereotypes: A Comparison of Men's and Women's Prisons in The United States of America</b>			:
Hochman, Lisa E. ('06)	Sociology	Campbell, Alec D.	
<b>The Medicalization of Obesity</b>			:
Duggan, Margaret A. ('06)	Sociology	White, Jonathan M.	
<b>The Social Construction Of Noncompliance In Medical Discourse</b>			:
Lim, Sarah P. ('06)	Sociology	Campbell, Alec D.	
<b>Why is American Poverty Different? A Comparative Approach to Poverty</b>			:
Stathis, Jessica L. ('06)	Sociology	Campbell, Alec D.	
<b>Social Marketing: Evaluating Three Health Campaigns</b>			:

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### 2006 Program

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- [Schedule - Wednesday](#)
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### Research Symposium

# Colby Undergraduate Research Symposium 2006

**May 3-5, Colby College, Waterville, Maine**

***Students from the following departments/programs have already submitted titles for papers and posters:***

Sponsoring Dept/Prgrm	Lead Author	Title	Date Time	Project Type	Mentor
American Studies	<a href="#">Jairus Steed</a> ('06)	Blue-eyed Soul in the 21st Century: African-American Influence on Popular American Music	May 4 4:15 pm	Presentation	Margaret T. McFadden, Steven R. Nuss
American Studies	<a href="#">Anna Erdheim</a> ('06)	Exploring Opportunity in America: Immigrant Entrepreneurship and Rags to Riches Success	May 5 11:00 am	Presentation	Margaret T. McFadden
American Studies	<a href="#">Kara Fagan</a> ('06)	From Ball of Fire to Cattle Queen: Gender and Class in The Films of Barbara Stanwyck	May 4 3:00 pm	Presentation	Margaret T. McFadden
American Studies	<a href="#">Tyler Hales</a> ('06)	Is Baseball Still America's National Pastime, or has Football Become the All-American Sport?	May 5 10:00 am	Presentation	Alec D. Campbell
American Studies	<a href="#">Emily Judem</a> ('06)	Off the Tracks	May 4 3:15 pm	Presentation	Margaret T. McFadden
American Studies / Women, Gender, Sexuality	<a href="#">Christina Terrell</a> ('06)	The Racialization of Female Body Image Perception in the United States	May 4 4:00 pm	Presentation	Margaret T. McFadden
American Studies	<a href="#">Katherine Hamm</a> ('06)	Why Do Men Hate Ani DiFranco? The Connection Between Women Rock	May 4 3:45	Presentation	Margaret T. McFadden



		<b>Musicians and the Image of Feminism</b>	pm		
American Studies	<u>Noah Balazs</u> ('06)	<b>iDentity: Constructing Identity in a Mass Mediated and Postmodern Society</b>	May 5 10:30 am	Presentation	<b>Margaret T. McFadden</b>
Anthropology	<u>Lauren Simmons</u> ('06)	<b>A Leader's Place in Revolution: How One Individual Embodies the Many Voices of Dissent</b>	May 3 2:05 pm	Presentation	<b>Catherine L. Besteman, Catherine L. Besteman</b>
Anthropology	<u>Chelsea Downs</u> ('06)	<b>Brand Management And The Wal-Mart Model</b>	May 3 1:30 pm	Presentation	<b>Catherine L. Besteman</b>
Anthropology	<u>Jamie Manzer</u> ('06)	<b>Denaturalizing Sex Binaries: Professional Women Officials Transgressing Gender Boundaries</b>	May 4 11:30 am	Presentation	<b>Mary Elizabeth Mills</b>
Anthropology	<u>Jane Lee</u> ('06)	<b>Status and Gender in Korea</b>	May 4 11:45 am	Presentation	<b>Mary Elizabeth Mills</b>
Anthropology	<u>Jessica Moore</u> ('07)	<b>The Little White Lie That Could Save the World</b>	May 3 1:00 pm	Presentation	<b>Catherine L. Besteman</b>
Anthropology	<u>Stephanie Atwood</u> ('06)	<b>To Be a Good Italian Woman</b>	May 4 11:15 am	Presentation	<b>Mary Elizabeth Mills</b>
Anthropology	<u>Laura Snider</u> ('06)	<b>Travesti Rights are Human Rights</b>	May 4 11:00 am	Presentation	<b>Mary Elizabeth Mills</b>
Anthropology	<u>Jamie Manzer</u> ('06)	<b>Unveiling Democracy: The Rhetorical and Ritualistic Disguises of Representation</b>	May 3 1:50 pm	Presentation	<b>Catherine L. Besteman</b>
Anthropology	<u>Jia-Ling Loo</u> ('06)	<b>The Culture of Open Source: Countering Hegemony in a Digital Economy</b>	May 3 2:20 pm	Presentation	<b>Catherine L. Besteman</b>
Anthropology / Art	<u>Greyson Brooks</u> ('06)	<b>Sociocultural Degeneration and State Patronage of the Arts: Mapplethorpe, Cultural Crisis, and the NEA</b>	May 3 1:15 pm	Presentation	<b>Catherine L. Besteman</b>
Art	<u>James Thompson</u> ('06)	<b>Residential Environmental Design: 'A House for an Ecologist' Design Competition Entry</b>	May 5 3:45 pm	Presentation	<b>David L. Simon</b>
Art	<u>Steven Weinberg</u> ('06)	<b>The Newspaper Redesign Project</b>	May 5 4:55 pm	Presentation	<b>Bevin L. Engman, Michael A. Marlais</b>
	<u>Caroline</u>	<b>Use of Devotional Art</b>	May 5		

Art	<u>O'Connor</u> ( '06)	<b>in the Public and Private Setting in Renaissance Italy</b>	4:15 pm	Presentation	<b>Veronique B. Plesch</b>
Art	<u>Tucker Burr</u> ( '06)	<b>Writing Styles of Modern Graffiti</b>	May 5 4:35 pm	Presentation	<b>Veronique B. Plesch</b>
Art	<u>Courtney Page</u> ( '06)	<b>Exploration of Composition in Mixed Media: Fabric, Steel, and Magnets</b>	May 5 5:15 pm	Presentation	<b>Harriett Matthews</b>
Biology	<u>Sarah Hoskinson</u> ( '06)	<b>A Comparison of Forest Type Resilience to Structural and Compositional Changes Following Beech Bark Disease Infestation</b>	May 5 3:15 pm	Presentation	<b>Judy L. Stone</b>
Biology	<u>Amanda McGarry</u> ( '07)	<b>A Genomic Approach to Detecting Salinity-Mediated Zinc Transporter Regulation in the Euryhaline Green Crab, <i>Carcinus maenas</i></b>		Poster	<b>Andrea R. Tilden</b>
Biology	<u>Malcolm Itter</u> ( '07)	<b>An Observational Study of Cavity Nest Site Selection in Black-capped Chickadees (<i>Poecile atricapillus</i>)</b>		Poster	<b>Catherine R. Bevier</b>
Biology	<u>Jonathan Ashcroft</u> ( '06)	<b>Antimicrobial Properties of Skin Secretions from the Mink Frog (<i>Rana septentrionalis</i>) on Endemic Bacteriological Isolates</b>		Poster	<b>Catherine R. Bevier, Frank A. Fekete</b>
Biology	<u>Spencer Koury</u> ( '06)	<b>Barbering: A Behavioral Expression of Dominance and Aggression In Caged Mice (<i>Mus musculus</i>)</b>		Poster	<b>Catherine R. Bevier</b>
Biology	<u>Matthew Meredith</u> ( '06)	<b>Concomitant Antibiotic and Mercury Resistance among Gastrointestinal Microflora of Feral Brook Trout, <i>Salvelinus fontinalis</i></b>	May 5 1:45 pm	Presentation	<b>Frank A. Fekete</b>
Biology	<u>Lauren Baard</u> ( '08)	<b>Differential Habituation of Male <i>Betta splendens</i> to Qualitatively Different Stimuli</b>		Poster	<b>Catherine R. Bevier</b>
Biology	<u>Michael Fleming</u> ( '06)	<b>Do Brown Anoles, <i>Anolis sagrei</i>, Have</b>		Poster	<b>Catherine R. Bevier</b>

		Dear Enemies?			
Biology	<u>Daniel Breen</u> ( '06)	<b>Effects of Feeding Interval and Meal Size on the Specific Dynamic Action of the Cuban Tree Frog (<i>Osteopilus septentrionalis</i>)</b>		Poster	<b>Catherine R. Bevier</b>
Biology / Environmental Studies	<u>Kali Abel</u> ( '07)	<b>Effects of Varying Light Cycles and Temperature on Activity Levels in Mediterranean Geckos: A Look Into Endogenous Clocks</b>		Poster	<b>Catherine R. Bevier</b>
Biology	<u>Spencer Koury</u> ( '06)	<b>Efficient Energy Allocation in Foraging: A Two Model Study in the Role of Learning</b>		Poster	<b>Catherine R. Bevier</b>
Biology	<u>Spencer Koury</u> ( '06)	<b>Genetic Basis for Self Compatibility in <i>Witheringia solanacea</i> (Solanaceae)</b>		Poster	<b>Judy L. Stone</b>
Biology	<u>David Civitello</u> ( '06)	<b>Genetic Breeding System of Gray Fox, <i>Urocyon cinereoargenteus</i>, in a Protected Population</b>	May 5 1:00 pm	Presentation	<b>Stacey L. Lance</b>
Biology	<u>Patrick Lizotte</u> ( '06)	<b>Genetic Variation Between Populations of the Rare Orchid <i>Isotria Medeoloides</i> and Implications for Conservation</b>	May 5 1:30 pm	Presentation	<b>Judy L. Stone</b>
Biology	<u>Meredith Lowmaster</u> ( '06)	<b>Influence of Body Size on Stress-Induced Color Change in the Green Anole (<i>Anolis carolinensis</i>)</b>		Poster	<b>Catherine R. Bevier</b>
Biology	<u>Elizabeth Turner</u> ( '06)	<b>Isolation and Characterization of Mercury and Antibiotic Resistant Bacterial Strains from Atlantic Salmon, <i>Salmo salar</i></b>		Poster	<b>Frank A. Fekete</b>
Biology	<u>Jonathan Ashcroft</u> ( '06)	<b>LPS and Environmental Stress as Factors that Affect Male Mate Selection in Mice</b>		Poster	<b>Catherine R. Bevier</b>
Biology	<u>Sharon McMonagle</u> ( '06)	<b>Lake Water Quality Analysis and Possible Remediation Techniques for China Lake, Kennebec County, Maine</b>		Poster	<b>David H. Firmage, F. Russell Cole</b>

Biology	<u>Erin Parry</u> ( '06)	<b>Mercury Resistance in a Multi-Drug Resistant Strain of the Fish Pathogen, <i>Aeromonas salmonicida</i></b>	May 5 pm	Presentation	<b>Frank A. Fekete, Frank A. Fekete</b>
Biology	<u>Victoria Work</u> ( '08)	<b>Microbial Mercury and Antibiotic Resistance in the Soil Systems of Avery Peak, Maine</b>		Poster	<b>Frank A. Fekete</b>
Biology	<u>Courtney Zecher</u> ( '06)	<b>Monitoring the Healing Time of Baitfish with Skin Ulcerations Using Fluorescein</b>		Poster	<b>G. Russell Danner</b>
Biology	<u>Tenzin Tsewang</u> ( '07)	<b>Overexpression and Purification of the Oat (<i>Avena fatua</i>) protein AFN1 and Construction of a pMAL/AFN1 expression plasmid</b>		Poster	<b>Russell R. Johnson</b>
Biology	<u>Courtney Zecher</u> ( '06)	<b>Pilot Analysis of Gray Fox, <i>Urocyon cinereoargenteus</i>, Major Histocompatibility Complex (MHC)</b>		Poster	<b>Stacey L. Lance</b>
Biology	<u>Jenny Mooney</u> ( '06)	<b>Population Estimate of Deer Mice, <i>Peromyscus maniculatus</i>, in the Forest Types of Perkins Arboretum</b>		Poster	<b>Catherine R. Bevier, Stacey L. Lance</b>
Biology	<u>Tara Bergin</u> ( '07)	<b>Predator Survival Tactics and Use of Habitat Cover in <i>Rana catesbeiana</i></b>		Poster	<b>Catherine R. Bevier</b>
Biology	<u>Natalie Wayne</u> ( '06)	<b>Preparation for Protein Expression Studies on the Wheat Grain PKABA1-Interacting Protein TaWD40</b>		Poster	<b>Russell R. Johnson</b>
Biology	<u>Colby Souders</u> ( '07)	<b>Responses to Playback Calls in a Brazilian Treefrog: <i>Scinax rizibilis</i></b>		Poster	<b>Catherine R. Bevier</b>
Biology	<u>Rachel Terry</u> ( '07)	<b>Restraint Stress and Aggression in Familiar Mice (<i>Mus musculus</i>)</b>		Poster	<b>Catherine R. Bevier</b>
Biology	<u>Michael Fleming</u> ( '06)	<b>Risk-Sensitive Foraging in Maine Woodland Rodents</b>		Poster	<b>Catherine R. Bevier</b>
Biology	<u>Cadran Cowansage</u> ( '08)	<b>Screening of Microsatellites for Estimation of Selfing Rates in <i>Witheringia</i></b>		Poster	<b>Judy L. Stone</b>

		<i>solanacea</i>			
Biology	<u>Rachel Terry</u> ( '07)	<b>The Effects of the Herbicide Atrazine on Male Fiddler Crab (<i>Uca</i> spp.) Territory Defence and Aggression</b>		Poster	<b>Catherine R. Bevier</b>
Biology	<u>Rachel Carr</u> ( '06)	<b>The Impact of Land Use Patterns and Watershed Characteristics on China Lake, Kennebec County, ME</b>		Poster	<b>David H. Firmage, F. Russell Cole</b>
Biology	<u>Matthew Aschaffenburg</u> ( '06)	<b>The Impact of Trait-Mediated Effects on Predator-Prey Interactions in the Rocky Intertidal Community</b>	May 5 2:45 pm	Presentation	<b>Catherine R. Bevier, Catherine R. Bevier, Catherine R. Bevier</b>
Biology	<u>Sarah Clark</u> ( '08)	<b>The Isolation and Characterization of Multiply Antibiotic Resistant Strains of Fish Pathogenic <i>Flavobacterium</i> Species</b>		Poster	<b>Frank A. Fekete</b>
Biology / Environmental Studies	<u>Kelly Bakulski</u> ( '07)	<b>Transmission of Frog Calls Through Different Habitats: A Test of the Environmental Selection Hypothesis</b>		Poster	<b>Catherine R. Bevier</b>
Chemistry	<u>Aaron Bradford</u> ( '07)	<b>Effects of Carbamoylation from Anticancer Sulfonylhydrazines on Homologous Recombination DNA Repair</b>		Poster	<b>Kevin P. Rice</b>
Chemistry	<u>Rami Zahran</u> ( '06)	<b>Epichlorohydrin Cross-Linking of Synthetic DNA Oligomers</b>		Poster	<b>Julie T. Millard</b>
Chemistry	<u>Aynara Chavez-Munoz</u> ( '09)	<b>Expression and Purification of Human DNA Polymerase Beta as a Target for Anti-Cancer Sulfonylhydrazines</b>		Poster	<b>Kevin P. Rice</b>
Chemistry	<u>Daniel Fowler</u> ( '06)	<b>Investigating the Mechanism of a Novel Ribosomal RNA Degradation Pathway</b>		Poster	<b>Frederick LaRiviere</b>
Chemistry	<u>Michelle Kim</u> ( '06)	<b>Synthesis and Investigation of Copper (I) Arene Complexes</b>	May 4 3:00 pm	Presentation	<b>Rebecca R. Conry</b>

Chemistry	<u>Hui Kim</u> ('06)	<b>Synthesis and Structure of Novel Polyphenylene Macrocycles</b>		Poster	<b>Dasan M. Thamattoor</b>
Computer Science / Psychology	<u>Patrick Rodiito</u> ('06)	<b>Motion Tracking and Prediction Using Fuzzy Logic</b>	May 4 2:15 pm	Presentation	<b>Joseph E. Atkins, Randolph M. Jones</b>
East-Asian Studies	<u>James Luckenbill</u> ('08)	<b>Botchan's Transformation in Accordance with Justice</b>	May 4 1:40 pm	Presentation	<b>Tamae K. Prindle</b>
East-Asian Studies		<b>Faith's Silent Vigil: Silence's Role and Meaning in Shusako Endo's Silence</b>		Presentation	
East-Asian Studies	<u>Alexander Connors</u> ('08)	<b>Narrative Structure in Kenzaburo Oë's A Personal Matter: Hierarchy of Chatman's Kernels and Satellites, and Suspense and Surprise</b>	May 4 2:15 pm	Presentation	<b>Tamae K. Prindle</b>
East-Asian Studies	<u>Katherine MacBain</u> ('06)	<b>Reality and Liminal Space in Murakami Haruki's 'Dance Dance Dance'</b>	May 4 1:45 pm	Presentation	<b>Tamae K. Prindle</b>
East-Asian Studies	<u>Liza Mitchell</u> ('08)	<b>Secrecy, Sexuality and the Covert Feminine Power in 'Masks'</b>	May 4 1:20 pm	Presentation	
East-Asian Studies	<u>John Kester</u> ('08)	<b>Silence in Silence: The Titular Significance of Shusako Endo's Novel</b>	May 4 2:00 pm	Presentation	<b>Tamae K. Prindle</b>
East-Asian Studies	<u>Morgan Manoff</u> ('08)	<b>The Confessional Hero of the 'Temple of the Golden Pavilion'</b>	May 4 1:00 pm	Presentation	<b>Tamae K. Prindle</b>
East-Asian Studies	<u>Lijah Barasz</u> ('06)	<b>The Effect of American Film on Chinese Youth Culture</b>	May 5 12:45 pm	Presentation	<b>Margaret T. McFadden</b>
East-Asian Studies / German/Russian	<u>Adil D'Sousa</u> ('06)	<b>The Family Novel in the Emerging Nation-State: A Comparative Study of Ba Jin's Jia and Lev Tolstoy's Anna Karenina</b>	May 4 1:45 pm	Presentation	<b>Kimberly A. Besio, Sheila M. McCarthy</b>
Economics	<u>Jessica Minty</u> ('06)	<b>Media Coverage and Disaster Relief</b>	May 5 3:30 pm	Presentation	
Economics	<u>B. Tjernstrom</u> ('06)	<b>Nomad's Land - Parks Protection in Mongolia: Structural and Human</b>	May 5 2:30 pm	Presentation	<b>Peter B. Ditmanson</b>

		<b>Obstacles</b>			
Economics	<u>Alexandra Funk</u> ('06)	<b>The Adequacy of Health Care Services for the Elderly in China</b>	May 4 4:00 pm	Presentation	
Economics / Environmental Studies	<u>B. Tjernstrom</u> ('06)	<b>Be the Change You Wish to See: National Attitudes and Climate Change Policy</b>	May 5 1:00 pm	Presentation	<b>, Thomas H. Tietenberg</b>
Economics	<u>Jonathan Wong</u> ('06)	<b>Analyzing the Determinants of Obesity in Maine</b>	May 4 5:00 pm	Presentation	<b>Michael R. Donihue</b>
Economics	<u>Brian Tierney</u> ('06)	<b>Religion and Happiness among China's Oldest-Old</b>	May 4 4:40 pm	Presentation	
Economics	<u>Michael Poplaski</u> ('07)	<b>Econometrically Modelling Alumni Giving to Colby and Other NESAC Schools</b>	May 4 4:20 pm	Presentation	<b>Michael R. Donihue</b>
Economics	<u>Caroline Theoharides</u> ('06)	<b>The Role of Home Equity in Retirement Saving: Building Your Nest (Egg)</b>	May 5 4:15 pm	Presentation	<b>Michael R. Donihue</b>
Education and Human Development	<u>Christabel Kwabi</u> ('06)	<b>An Evaluation of the Ghanaian Education System</b>	May 4 3:00 pm	Presentation	<b>Mark B. Tappan</b>
Education and Human Development	<u>Emily Brostek</u> ('06)	<b>♦The Kind of Person I Am:♦ Reassessing the Aims of Community Service and Its Impact on College Students Through Identity Development</b>	May 4 3:15 pm	Presentation	<b>Mark B. Tappan</b>
English	<u>Kara McCabe</u> ('06)	<b>A Journey Through Memory and Self in the Works of Edwidge Danticat and Julia Alvarez</b>	May 3 2:15 pm	Presentation	<b>Cedric Gael Bryant</b>
English	<u>Erica Dorpalen</u> ('06)	<b>Carry Emptiness: The Ecology and Zen Buddhism of Gary Snyder's Poetry</b>	May 4 2:45 pm	Presentation	<b>Peter B. Harris</b>
English	<u>Erin Rhoda</u> ('06)	<b>Let Us Now Praise Famous Women</b>	May 4 2:15 pm	Presentation	<b>Tilar J. Mazzeo</b>
Environmental Studies	<u>Katherine Renwick</u> ('07)	<b>A Spatial Analysis of Impervious Surfaces at Colby College in 1965 and 2006</b>		Poster	<b>F. Russell Cole</b>
Environmental Studies	<u>Anna Barnwell</u> ('08)	<b>Are Debt-for-Nature Swaps an Effective Conservation Strategy?</b>		Poster	<b>F. Russell Cole</b>
Environmental Studies	<u>Alexander McPherson</u>	<b>Developing a Model for Pedestrian Route</b>		Poster	<b>F. Russell Cole</b>

	('07)	Selection at Colby			
Environmental Studies	<u>Sandy Beauregard</u> ('06)	<b>Ecotourism in Developing Countries</b>		Poster	<b>F. Russell Cole</b>
Environmental Studies	<u>Sharon McMonagle</u> ('06)	<b>Educational Opportunities and Average Income in Maine Towns</b>		Poster	<b>Philip Nyhus</b>
Environmental Studies	<u>Sarah Kelly</u> ('06)	<b>Energy Use Patterns and Potential Areas for Energy Conservation in Dorm Rooms at Colby College</b>	May 5 3:00 pm	Presentation	<b>F. Russell Cole, Thomas H. Tietenberg</b>
Environmental Studies	<u>Jenna Morrison</u> ('06)	<b>Environmental Awareness of Waterville Junior High Students</b>	May 5 3:30 pm	Presentation	<b>F. Russell Cole</b>
Environmental Studies	<u>Christopher Russoniello</u> ('06)	<b>Estimating the Impact of Catastrophic Sea Level Rise in Maine</b>		Poster	<b>F. Russell Cole</b>
Environmental Studies	<u>Caitlin Cleaver</u> ('06)	<b>Feasibility of the Reintroduction of Wolves (<i>Canis lupus lycaon</i>) in Maine: A GIS Study</b>		Poster	<b>F. Russell Cole</b>
Environmental Studies	<u>Katherine Renwick</u> ('07)	<b>Gray Wolf Reintroduction in the Greater Yellowstone Area</b>		Poster	<b>F. Russell Cole</b>
Environmental Studies	<u>Alexandra Jospe</u> ('06)	<b>Modeling Spatially Explicit Human-wildlife Conflict: GIS and Moose-vehicle Collisions in Maine</b>	May 5 2:00 pm	Presentation	<b>Philip Nyhus</b>
Environmental Studies	<u>Alexandra Jospe</u> ('06)	<b>Modeling Spatially Explicit Human-wildlife Conflict: GIS and Moose-vehicle Collisions in Maine.</b>		Presentation	<b>Philip Nyhus</b>
Environmental Studies	<u>Hilary Langer</u> ('06)	<b>Prioritizing Land Purchases for the Belgrade Regional Conservation Alliance</b>		Poster	<b>F. Russell Cole</b>
Environmental Studies	<u>Sarah Kelly</u> ('06)	<b>Solar Panel Modeling on Suitable Roofs at Colby</b>		Poster	<b>F. Russell Cole</b>
Environmental Studies	<u>Jacqueline Roller</u> ('06)	<b>Spatial Analysis of Colby College Trails: Perkins Arboretum and Runnals Hill</b>		Poster	<b>F. Russell Cole</b>
Environmental Studies	<u>Hilary Langer</u> ('06)	<b>The Cost of Conservation: Payments for Environmental Services on The Osa</b>	May 5 2:30 pm	Presentation	<b>James L.A. Webb</b>



		<b>Peninsula, Costa Rica</b>			
Environmental Studies	<u>Sharon McMonagle</u> ('06)	<b>The Effects of Climate Change on Coral Reef Ecosystems</b>		Poster	<b>F. Russell Cole</b>
Environmental Studies	<u>Bethany Peck</u> ('06)	<b>The Effects of Climate Change on Polar Bears</b>		Poster	<b>F. Russell Cole</b>
Environmental Studies	<u>Kerry Whittaker</u> ('08)	<b>What is the Role of Seed Banks in Preserving Biodiversity?</b>		Poster	<b>F. Russell Cole</b>
French/Italian	<u>Sara Booth</u> ('06)	<b>Human Trafficking, Immigration, and Prostitution in Italy</b>	May 4 1:00 pm	Presentation	<b>Allison A. Cooper, Mario Moroni</b>
Geology	<u>Samuel Weeks</u> ('06)	<b>Analysis and Interpretation of a Triassic-aged Reef Complex, Wallowa Terrane, Northeastern Oregon</b>		Poster	<b>Robert A. Gastaldo</b>
Geology	<u>Theodore McDermott</u> ('06)	<b>Analysis of Soil Potential for Future Development: Waterville and Oakland, Maine</b>		Poster	<b>Robert E. Nelson</b>
Geology	<u>John Goss</u> ('06)	<b>Monitoring Surface Displacement of the Colby Green Retaining Pond Dams</b>		Poster	<b>Robert E. Nelson</b>
Geology	<u>Elizabeth Mollo-Christensen</u> ('06)	<b>Potential Effects of Deep-Ocean Carbon Dioxide Sequestration on Foraminifera</b>	May 4 3:15 pm	Presentation	<b>Robert A. Gastaldo</b>
Geology	<u>Adam Atkinson-Lewis</u> ('06)	<b>Prediction Surface Mapping and Analysis of Carbon Dioxide Flux and Surface Temperature and Comparison with Alteration Zones on Eldfell Volcano Cone, Iceland</b>		Poster	<b>Jennifer D. Shosa</b>
Geology	<u>Christopher Russoniello</u> ('06)	<b>Seasonal Fluid Flux Through the Serpentine Bog, Belgrade Lakes Region, Maine</b>		Poster	<b>Jennifer D. Shosa</b>
Geology	<u>Lora Golann</u> ('06)	<b>The Skeleton in Maine's Closet: Controversy Surrounding the Allagash Wilderness Waterway</b>		Poster	<b>Bruce F. Rueger</b>
		<b>Using Geochemical</b>			

Geology	<u>Lindsay Masters</u> ('06)	<b>Alteration of Seafloor Basalts as a Proxy for Fluid Flux through the Ocean Crust</b>		Poster	<b>Jennifer D. Shosa</b>
Geology	<u>Katherine Curtis</u> ('06)	<b>Using Historic Climatological Data to Determine the Hydrologic Seasons in a Small Watershed</b>		Poster	<b>Jennifer D. Shosa</b>
Geology	<u>Kathryn Lidington</u> ('06)	<b>Variation in Beach Profiles and Sediment Characteristics at Popham Beach, Phippsburg, ME</b>	May 4 3:00 pm	Presentation	<b>Robert E. Nelson</b>
Government	<u>Michael Deheeger</u> ('07)	<b>'Long-Neck': Purgatory on the Thai-Burma Border</b>	May 5 1:00 pm	Presentation	<b>Walter F. Hatch</b>
Government	<u>Jessica Varnum</u> ('06)	<b>Catalyzing Change: Towards Accelerated and Expanded U.S.-EU-Russian Action to Reduce the Threat of Nuclear Terrorism</b>	May 3 4:15 pm	Presentation	<b>Kenneth A. Rodman</b>
History	<u>Nathaniel Stone</u> ('06)	<b>Ben Butler and the Woman Order: Hard War Diplomacy or Inhumane Treatment of the Citizens of New Orleans?</b>	May 5 4:45 pm	Presentation	<b>Elizabeth D. Leonard</b>
History	<u>Jonathan Ashcroft</u> ('06)	<b>British and French Intelligence on the German Question and the Growth of Pacifist Movements</b>		Presentation	<b>Paul R. Josephson, Paul R. Josephson, Raffael M. Scheck, Raffael M. Scheck</b>
History	<u>O. Orantes</u> ('07)	<b>Glimpses of Hope, Laughter, and Sadness: Stories from Burmese Women Refugees in Thailand</b>	May 5 1:30 pm	Presentation	<b>James L.A. Webb</b>
History	<u>Nicole Lavery</u> ('07)	<b>Maryland and Kentucky: How Abraham Lincoln Kept Each Loyal to the Union</b>	May 5 4:30 pm	Presentation	<b>Elizabeth D. Leonard</b>
History	<u>Benjamin Herbst</u> ('08)	<b>Pre-Civil War Acts of Violence and their influence on the Civil War</b>	May 5 5:00 pm	Presentation	<b>Elizabeth D. Leonard</b>
History	<u>Lauren Brown</u> ('06)	<b>Sars in Taiwan: Effects on Public Health and Treatment of Infectious Disease</b>	May 5 2:00 pm	Presentation	<b>Peter B. Ditmanson</b>
		<b>Space Age Learning:</b>			

History	<u>Courtney Kubilis</u> ('06)	<b>Education Reform in the USSR and USA in the Age of Sputnik</b>	May 4 5:00 pm	Presentation	<b>Paul R. Josephson</b>
History	<u>Katie Fuller</u> ('06)	<b>Spinners and Losers: Lewiston's Irish and French-Canadian Immigrants 1850-1930</b>	May 4 5:20 pm	Presentation	<b>Paul R. Josephson</b>
History	<u>Timothy Stenovec</u> ('06)	<b>The Taking of Mayflower Hill: the Vietnam Antiwar Movement at Colby College</b>	May 4 4:20 pm	Presentation	<b>Robert S. Weisbrot</b>
History	<u>Anne Kearney</u> ('08)	<b>Waging the War of Opinions: Northern and Southern Newspaper Coverage of Antietam</b>	May 5 4:15 pm	Presentation	<b>Elizabeth D. Leonard</b>
History	<u>Julia Malkin</u> ('06)	<b>From Private Protest to Public Philosophy: The Democratic Society of Pennsylvania and the Election of 1800</b>	May 4 4:40 pm	Presentation	<b>Jason M. Opal</b>
Independent Studies / American Studies	<u>Chelsea Downs</u> ('06)	<b>The Economics of Hip Hop Culture -- More Than Music</b>	May 5 11:30 am	Presentation	<b>Margaret T. McFadden</b>
International Studies / Anthropology	<u>Laura Snider</u> ('06)	<b>Mobilized Mothers and Women Warriors: Women's Political Participation in Sri Lanka and Chile</b>	May 5 3:00 pm	Presentation	<b>Ben W. Fallaw, Mary Elizabeth Mills</b>
Mathematics	<u>Chad Stecher</u> ('08)	<b>Analysis of a Proxy of Suicidal Ideation in the Maine Youth Drug and Alcohol Use Survey/Youth Tobacco Survey</b>		Poster	<b>Liam O'Brien</b>
Mathematics	<u>Jane Leary</u> ('06)	<b>Hypatia: the Original Woman Mathematician</b>	May 3 5:00 pm	Presentation	<b>Thomas R. Berger</b>
Mathematics	<u>Julie Jaenicke</u> ('06)	<b>Piero della Francesca: Geometry in Painting</b>	May 3 4:45 pm	Presentation	<b>Thomas R. Berger</b>
Music	<u>Stephen Planas</u> ('06)	<b>'A Schenkerian Analysis of Beethoven's Piano Sonata No. 8, 2nd Movement'</b>		Poster	<b>Steven E. Saunders</b>
Music	<u>B. Pruitt</u> ('06)	<b>An die Musik</b>		Poster	<b>Steven E. Saunders</b>
Music	<u>Giergji Gaji</u> ('07)	<b>Form and Structure in Second Movements of Beethoven's Sonatas : A Schenkerian Analysis of the Adagio from</b>		Poster	<b>Steven E. Saunders</b>

		<b>Sonata Op.31 No.2 'Tempest'</b>			
Music	<u>Garry Bertholf</u> ('06)	<b>If Lester Leapt Into Schenkerian Analysis</b>		Poster	<b>Steven E. Saunders</b>
Music	<u>Barbara Hough</u> ('06)	<b>Schenkerian Analysis of the Allegro Movement from Bach's Flute Sonata in E Major</b>		Poster	<b>Steven E. Saunders</b>
Music	<u>Hye Kim</u> ('08)	<b>Was Handel a Plagiarist?</b>	May 4 2:15 pm	Presentation	<b>Steven E. Saunders</b>
Philosophy	<u>Gregory Lusk</u> ('06)	<b>Virtue Epistemology: Rethinking the Presuppositions of Knowledge</b>	May 3 2:30 pm	Presentation	<b>Daniel H. Cohen</b>
Physics and Astronomy	<u>Lent Johnson</u> ('07)	<b>Challenges in Radiative Transfer Modeling - W3 IRS5</b>		Poster	<b>Murray F. Campbell</b>
Physics and Astronomy	<u>Ryland Brooks</u> ('07)	<b>Images and Spectra at Mid-Infrared Wavelengths of the High-Mass Star-Forming Complex W3</b>		Poster	<b>Murray F. Campbell</b>
Psychology	<u>Gabrielle Adams</u> ('06)	<b>Compensation in the Context of Reparations</b>		Poster	<b>Thane S. Pittman</b>
Psychology	<u>Chelsea McCann</u> ('07)	<b>Ego Depletion, Control, and Their Effects on Intrinsic Motivation</b>		Poster	<b>Thane S. Pittman</b>
Psychology / Biology	<u>Marissa Meyer</u> ('07)	<b>Evaluation of Immune Cell Infiltration After Spinal Cord Injury in the Guinea Pig</b>		Poster	<b>Jennifer R. Yates, Lynn Hannum</b>
Psychology	<u>Cheryl Hahn</u> ('08)	<b>Gender Differences in the Effects of Social Context on Emotional Responding</b>		Poster	<b>Yulia Chentsova Dutton</b>
Psychology	<u>Katharine Gilroy</u> ('06)	<b>MP and 6CI-tryptophan Administered to Attenuate Secondary Pathology in Guinea Pig Spinal Cord Injury</b>	May 5 1:30 pm	Presentation	<b>Jennifer R. Yates</b>
Psychology	<u>Steen Sehnert</u> ('06)	<b>Omission and Commission in the Inaction Inertia Paradigm</b>	May 5 2:30 pm	Presentation	<b>Thane S. Pittman</b>
Psychology	<u>Rebecca Reisman</u> ('06)	<b>Overconfidence After Exposure to Misleading Post-Event Information</b>		Poster	<b>Ayanna Kim Thomas</b>
	<u>Gabrielle</u>	<b>Remorse and the</b>			<b>Thane S.</b>

Psychology	<u>Adams</u> ('06)	<b>Circumstances Surrounding Crime</b>		Poster	<b>Pittman</b>
Psychology	<u>Gillian Butsch</u> ('06)	<b>Terror Management Theory and Belief in an Afterlife</b>		Poster	<b>Thane S. Pittman</b>
Psychology	<u>Gabrielle Adams</u> ('06)	<b>Time, Remorse, Compensation, and Reparations</b>	May 5 1:00 pm	Presentation	<b>Thane S. Pittman</b>
Psychology	<u>Benjamin Crane</u> ('06)	<b>Up-Regulation and American Nationalism in Collegiate Athletes</b>		Poster	<b>Yulia Chentsova Dutton</b>
Psychology	<u>Margaret Jackson</u> ('06)	<b>Upregulation of Sadness During Films: A Self-Report Analysis</b>		Poster	<b>Yulia Chentsova Dutton</b>
Psychology	<u>Alan Chang</u> ('06)	<b>Vividness and The Dilution Effect</b>		Poster	<b>Thane S. Pittman</b>
Psychology		<b>Specificity and Affective Valence of Autobiographical Memories in Depression</b>	May 5 pm	Presentation	<b>Yulia Chentsova Dutton</b>
Religious Studies	<u>Jonathan Bastian</u> ('06)	<b>Logical Liberation: Perspectives from the East and West</b>	May 4 2:30 pm	Presentation	<b>Nikky-Guninder K. Singh</b>
Science, Technology, and Society	<u>Ethan Payne</u> ('06)	<b>Big Ideas, Big Technology and the Founding of Las Vegas 1905-1935</b>	May 5 11:15 am	Presentation	<b>Paul R. Josephson</b>
Science, Technology, and Society	<u>Jakob Moe</u> ('06)	<b>From Hatcheries to Aquaculture: A Technical Solution to a Tragedy in the United States?</b>	May 5 10:45 am	Presentation	
Science, Technology, and Society	<u>Madeline Horwitz</u> ('06)	<b>Man-Made Menopause</b>	May 5 10:15 am	Presentation	<b>Piers Hale</b>
Science, Technology, and Society	<u>Aaron Bradford</u> ('07)	<b>Video Games and Social Anxiety: A Historical Approach to the Fear of Youth</b>	May 5 10:00 am	Presentation	<b>Piers Hale</b>
Science, Technology, and Society	<u>George A. Williams</u> ('06)	<b>Viewing the Human Body as Technology</b>	May 3 3:45 pm	Presentation	
Women, Gender, Sexuality	<u>Jessica Seymour</u> ('06)	<b>The Perceptions and Realities of Pornography on Colby College Campus</b>		Poster	<b>Lisa Arellano</b>

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