4-27-2011

Colby Undergraduate Research Symposium 2011 Program & Abstracts

Colby Undergraduate Research Symposium 2011

Program & Abstracts

April 27, 28, & 29

Colby College
Waterville, Maine

Sponsored by:
Office of the Dean of Faculty

Etiquette of Attending Symposia: A Gentle Note to Presenters and Audience

Please hold your questions and comments until the speaker has finished his/her presentation.

◆

Please enter or leave a presentation room between speakers rather than potentially disrupt a presentation in progress.

◆

If you must leave a session in progress, please do so quietly.

◆

If you are a presenter, please remain in the presentation room for all presentations in your session out of respect for the other presenters.

A Note of Appreciation

The organizers would like to thank all of the students for the hard work they put into these presentations, the faculty mentors for their guidance, and the many students, faculty, and staff whose hard work and preparation helped to make this event possible. We also want to thank Paul Meyer for maintaining and troubleshooting the symposium web site.

◆

This event was sponsored by the Office of the Dean of Faculty

Celebration of the 12th Anniversary of the Colby Undergraduate Research Symposium

Keynote Address

Wednesday, April 27
7:30 PM, Ostrove Auditorium

Professor Cathy Bevier: Smelly Frog Gives Clues About Conservation Action.

Professor Debra Barbezat: The Jockey Project.

Professor Steven Saunders: Getting "Real" about Research: Original Scholarship and the Undergraduate Experience.

Sponsored by the Office of the Dean of Faculty

Invited Poster Presentations:

Abigael Cheruiyot ('12)
Characterization of Mutant CHMP2B-mediatied Eye Deformities in a *Drosophila* Model of Frontotemporal Dementia
Mentor: Dr. Tariq Ahmad, Biology

Cee Jay Frederick ('11)
Development of Microsatellite Primers in the Anemone Species *Metridium* senile
Mentor: Dr. Paul Greenwood, Biology

Kimberly Bittler ('11)
Zooplankton, Water Quality and Development in the Belgrade Lakes
Mentor: Dr. Russell Cole, Environmental Studies

Sarah Flanagan ('11)
Female Mate Choice and Male Physiological Condition in the Brown Anole, *Anolis sagrei*.
Mentor: Dr. Cathy Bevier, Biology

Martha Witick ('12)
Remote Robotic Avatars
Mentor: Dr. Bruce Maxwell, Computer Science

Dustin Hickey ('11)
Interstellar Dust and its Effect on Modeling High Mass Protostars
Mentor: Dr. Murray Campbell, Physics and Astronomy

Sarah Martinez ('11)
The Effects of RNA Interference on TaABF1 and GAMyb Gene Expression in Barley Aleurone Cells
Mentor: Dr. Russell Johnson, Biology

Sophie Sarkar ('11)
Buffernomics: Assessing the Motivations Behind Shoreline Resident's Willingness to Pay for Lake Conservation on North Pond and East Pond
Mentor: Dr. Philip Nyhus, Environmental Science

Karlyn Adler ('11)
Affluent Students' Commitment and Motivation to Social Justice
Mentor: Dr. Adam Howard, Education

Anna Simeonova ('11)
The Impact of European Union Accession on Foreign Direct Investment
Mentor: Dr. Andreas Waldkirch, Economics

Olisa Okoh ('13)
DO THIS... NOT THAT: A "Shout Out" from Students of Color to Faculty and Administrators
Mentor: Dr. Julie de Sherbinin, German and Russian

Travis Wright ('12)
Characterizing the Zebrafish Kidney Phagocyte Respiratory Burst Response to *Staphylococcus aureus*
Mentor: Dr. Lynn Hannum, Biology

Colby Undergraduate Research Symposium 2011
April 27 - April 29, Colby College, Waterville, Maine

Research Presentations

Wednesday, April 27

SESSION I: HISTORY ***Miller 8***
Introduction to History Presentations ***Session Chair: Elizabeth Leonard***
9:00 - 9:50 AM

Delaney McDonough ('13)
A Well-Hidden response: Psychology and the Catholic Church

Tagg Martin ('13)
Golf and its Socioeconomic Impact in the 20th Century

Robert Barnum ('12)
Conservationism and Capitalism in the American West

SESSION II: ENVIRONMENTAL STUDIES ***Hurd***
Environmental Studies ***Session Chair: Russell Cole***
1:00 - 5:00 PM

1:00 pm **Rachel Baron ('11)**, Environmental Studies
An Assessment of Biomass Energy at Colby College

1:25 pm **Courtney Beaulieu ('11)**, Environmental Studies
State of Maine's Environment: Health Effects of Woodsmoke in Maine

1:50 pm **Kimberly Bittler ('11)**, Environmental Studies
Zooplankton of the Belgrade Lakes

2:15 pm **Sophie Sarkar ('11)**, Environmental Studies
Buffernomics: Assessing the Motivations behind Shoreline Resident's Willingness to Pay for Lake Conservation on North Pond and East Pond

2:40 pm **Brynna Patel ('11)**, Environmental Studies
Community Participation in Lake Stewardship: An analysis of the attitudes, values, and knowledge of lakefront property owners in the Belgrade Lakes region ojf Maine

3:05 pm Break

3:25 pm **Michelle Russell ('11)**, Environmental Studies
State Leadership for Safer Chemicals Policy Reform: Lessons from California, Maine, Minnesota and Washington.

3:50 pm **Andrea Notopoulos ('11)**, Environmental Studies
Pedaling for Change: Bicycle Use in the Colby and Waterville Communities

4:10 pm **Sarah Sorenson ('11)**, Environmental Studies
Can Redevelopment and Restoration Coexist? An Analysis of the Anacostia Waterfront Initiative

4:30 pm **Blair Braverman ('11)**, Environmental Studies
Environmental Writing

SESSION III: GENERAL SESSION ***Smith***

Session Chair: Stephanie Taylor

1:00 - 2:30 PM

1:00 pm **Peter Allfather ('11) and Tory Gray ('11)**, Psychology
Computerized Balance Testing in the Assessment and Diagnosis of Mild Traumatic Brain Injury

1:25 pm **Tory Gray ('11), Morganne Kraines ('11) and Nora McCall ('11)**, Psychology
Inspiring the Next Generation of Neuroscientists: Brain Awareness Week in Waterville, Maine

1:45 pm **Greta Wells ('11)**, Geology
History of and Geomorphologic Processes Acting on the Messalonskee Stream, Oakland-Waterville, Maine

SESSION IV: GENERAL SESSION ***Whitney***

Session Chair: Winifred Tate

1:00 - 2:30 PM

1:00 pm **Alexandra Solsvig ('11)**, Education and Human Development
Successful Intelligence and Colby's Curriculum

1:25 pm **My Huynh ('11)**, Anthropology
Exploring Interracial Realities of Vietnamese AmerAsians to their Mothers, Fathers, and Homelands

1:45 pm **Sadie Robertson ('11)**, Anthropology
Young Minds, New Perspectives: A Curriculum for Understanding Difference, Eliminating Discrimination and Inspiring Social Action in Middle School

2:05 pm **Emily Bierwirth ('11)**, Anthropology
Flash Club: A Dancer's Documentary

SESSION V: ANTHROPOLOGY ***Diamond 243***

Culture, Mobility, Identity: Encounters in the African Diaspora Presentations ***Session Chair: Daniel Mains***

1:00 - 2:15 PM

Annika Moline ('14)
Community: Comparing and Contrasting the Somali Experience in New England and the Midwest

Lindsay Hylek ('12)
The African Diaspora and the Religious and Cultural Movement of Rastafarianism

Sam Carter ('11)
An International Pastime: The African Diaspora in Major League Baseball

Julia Knoeff ('13)
Tracing the Mangue Beat: Brazilian Hip-Hop as an Identity Within the African Diaspora

Sarah Richard ('12)
Incorporation of the African Diaspora into Mainstream France

SESSION VI: GENERAL SESSION

Smith
Session Chair: Jan Holly

2:45 - 4:00 PM

2:45 pm **Peter Graham ('12) and Sarah Harmon ('12)**, Computer Science
PlayZam: an Online Learning Environment

3:05 pm **Sarah Harmon ('12)**, Mathematics
Measuring and Modeling Sensory Conflict

3:25 pm **Adam Szatrowski ('12) and Stephen Sentoff ('11)**, Computer Science
Computational Modeling of Macroeconomics

SESSION VII: GENERAL SESSION

Whitney
Session Chair: Christopher Soto

2:45 - 4:30 PM

2:45 pm **Michael Noll ('11)**, Religious Studies
Learning and Playing at the Ama Ghar Home in Kathmandu, Nepal

3:05 pm **Nicolyna Enriquez ('11)**, Art
[De]sexualizing the Saints in the Middle Ages

3:25 pm **Anna Sawch ('11)**, English
Purpose Found: Conditions of Meaningful Existence, Selfhood and the Role of the Other in John Milton's Paradise Lost

Colby Undergraduate Research Symposium 2011
April 27 - April 29, Colby College, Waterville, Maine

Research Presentations

Thursday, April 28

SESSION VIII: RELIGIOUS STUDIES ***Lovejoy 344***
Death and Spirituality Presentations ***Session Chair: Debra Campbell***
9:30 - 10:45 AM

Dennis Gallagher ('12)
Hospice Care: An Opportunity for Spiritual Healing
Ellen Ramage ('11)
AIDS and Catholicism: Trials and Responses
David Welsh ('12)
Free Speech v. Funerals: Snyder v. Phelps & the Sacred Nature of Funerals

SESSION IX: WOMEN GENDER AND SEXUALITY STUDIES ***Smith***
Women Gender and Sexuality Studies Honors Presentations ***Session Chair: Lisa Arellano***
10:00 - 11:30 AM

10:00 am **Qainat Khan ('11)**, Women, Gender, Sexuality
'Pretty, Witty and Gay!': Queer Counter Narratives in West Side Story

10:30 am **Emma Anastos-Wallen ('11)**, Women, Gender, Sexuality
The Regulation of Sex-Oriented Businesses in Maine: Prescriptive Discourses About Sexuality

11:00 am **Heather Pratt ('11)**, Women, Gender, Sexuality
Silencing and Sexual Assault at Colby College

SESSION X: AMERICAN STUDIES ***Hurd***
American Studies Senior Research Papers ***Session Chair: Margaret McFadden***
10:00 AM - 12:30 PM

10:00 am **J. Dodds ('11)**, American Studies
Constructed Blackness and the Importance of Genre in Spike Lee's 'Miracle at St. Anna'

10:20 am **Maureen Quinn ('12)**, African Studies
Unattainable Success: Spike Lee's Bamboozled

10:40 am **J. Muller ('11)**, American Studies
Everyone Wants Their Own Slice of the Pie: the Struggle for Equality in Spike Lee's 'Do the Right Thing'

11:00 am **Anne Geraghty ('11)**, American Studies
He Got Game: Basketball's shift from the game to the 'green'

11:30 am **Margot Apothaker ('11)**, African Studies

Spike Lee's 'Girl 6:' Representing Black Women in Hollywood

11:40 am **Mavrick Afonso ('11)**, American Studies
A Piece of the Pie: Do The Right Thing and Territorial Behavior

SESSION XI: ANTHROPOLOGY ***Whitney***
Anthropology Honors Presentations ***Session Chair: Catherine Besteman***
11:00 AM - 1:00 PM

11:00 am **Zachary Mitchell ('11)**, Anthropology
Profits over People: Inequality and the American Dream

11:40 am **Deborah Merzbach ('11)**, Anthropology
Summer Camp as a Rite of Passage: An Explication of Camp as a Transformative Experience

12:20 pm **Rachel Gleicher ('11)**, International Studies
From Victims and Villains to Protagonists: Immigration and Citizenship in Italy

SESSION XII: WOMEN GENDER & SEXUALITY STUDIES ***Smith***
Women Gender &Sexuality Studies Honors Presentations ***Session Chair: Lisa Arellano***
1:00 - 4:00 PM

1:00 pm **Heather Pratt ('11)**, Women, Gender, Sexuality
Cosmopolitan Magazine and the Third Wave of Feminism

1:15 pm **Qalnat Khan ('11)**, Women, Gender, Sexuality
'The liberator who destroyed my property has realigned my perceptions:' White Masculine Subjectivity in Fincher's Se7en, Fight Club and The Social Network

1:30 pm **Karlyn Adler ('11)**, Women, Gender, Sexuality
Gender, Athletics, and the Media

1:45 pm **Emma Anastos-Wallen ('11)**, Women, Gender, Sexuality
Eminem's Multiple Masculinities

2:00 pm **Katherine Brezinski ('11)**, Women, Gender, Sexuality
Ellen DeGeneres: One Woman's Impact on the Gay Revolution and Coming Out

2:15 pm **Amy Dunlap ('11)**, Women, Gender, Sexuality
Trafficking in Humans: Modern-Day Slavery and Gender Violence in Our Backyard

2:30 pm **Hali Castleman ('11)**, Women, Gender, Sexuality
Teen Motherhood on MTV: Glamorous or Gritty?

2:45 pm **Michael Talarico ('11)**, Women, Gender, Sexuality
NFL Players and Sexual Assault

3:15 pm **Natasha De Sherbinin ('11)**, Women, Gender, Sexuality
Hook-Up Culture at Colby College: The Search for Female Sexual Liberation

3:30 pm **Margot Apothaker ('11)**, Women, Gender, Sexuality
Dove's 'Campaign for Real Women' and U by Kotex 'Break the Cycle:' Advertising Campaigns that Target Girls and Women

SESSION XIII: AMERICAN STUDIES ***Hurd***
American Studies Senior Research Papers ***Session Chair: Margaret McFadden***
1:00 - 2:00 PM

1:00 pm **Barbara Santos ('11)**, American Studies
'By Any Means Necessary': Taking Ownership of Black History in Spike Lee's 'Malcolm X'

1:20 pm **Anne Wardwell ('11)**, American Studies
'Four Little Girls:' An Ongoing Civil Rights Struggle

1:40 pm **Alison Iannotti ('11)**, American Studies
Spike Lee's 'He Got Game:' Representing the African-American Family and Socioeconomic Mobility through Sport

SESSION XIV: HISTORY ***Whitney Room***
History Honors Thesis Presentations ***Session Chair: Paul Josephson***
1:00 - 2:30 PM

1:00 pm **Caley Robertson ('11)**, History
Hastening the Wheels of Change: International Cold War Pressure and Civil Rights Reform During the Truman Presidency

1:30 pm **Christopher Scharff ('11)**, History
The Rise of Corporate Social Responsibility

2:00 pm **Kristin Nissen ('11)**, History
National Myths, Local Legacies, and Personal Stories: Japan's Conflicting War Memories

SESSION XV: GERMAN ***Whitney***
Identities and Ideologies ***Session Chair: Cyrus Shahan***
2:30 - 4:30 PM

2:30 pm **Ramsey Meigs ('11)**, German/Russian
Die Katastrophe des digitalisierten Selbstes: Kant, Jelinek und Adorno im Zeitalter von Facebook

2:50 pm **James Violette ('11)**, German/Russian
Zombies, Sex Dolls and the End of the World: Enlightenment and Dystopia in Thor Kunkel's Schaumschwester

3:10 pm **Clifford Katz ('11)**, German/Russian
Technik, Gesellschaft, und Alexander Kluges 'Lernprozesse'

3:30 pm **Meredith Fast ('11)**, German/Russian
Die Erfolg der Puppen: Aufklärung durch Komplikation des Subjekts und Objekts

3:50 pm **Anna Franzen ('11)**, German/Russian
Die Vergangenheitsbewältigung in Wolfgang Koeppens Der Tod in Rom

4:10 pm **Katherine MacNamee ('14)**, German/Russian
Literature as a Key Element in Second Language Acquisition

SESSION XVI: ENGLISH ***Hurd***
On with the Story: Readings in Fiction, Screenplay, and Memoir ***Session Chair: Jennifer Boylan***
3:00 - 5:00 PM

3:00 pm **Darcy Bullock ('11)**, English
On with the Story 1: Readings in Fiction, Screenplay and Memoir

3:10 pm **Duncan Hardock ('11)**, English
On with the Story 2: Readings in Fiction, Screenplay, and Memoir

3:20 pm **Catherine Hawkins ('11)**, English
On with the Story 3: Readings in Fiction, Screenplay, and Memoir

3:30 pm **Tajreen Hedayet ('11)**, English
On with the Story 4: Readings in Fiction, Screenplay, and Memoir

3:40 pm **Peter Johnson ('11)**, English
On with the Story 5: Readings in Fiction, Screenplay, and Memoir

3:50 pm **Hopestill Kraft ('11)**, English
On with the Story 6: Readings in Fiction, Screenplay, and Memoir

4:00 pm **Benjamin Mitchell-Lewis ('11)**, English
On with the Story 7: Readings in Fiction, Screenplay, and Memoir

4:10 pm **Grant Patch ('12)**, English
On with the Story 8: Readings in Fiction, Screenplay, and Memoir

4:20 pm **Hannah Pulit ('11)**, English
On with the Story 9: Readings in Fiction, Screenplay, and Memoir

SESSION XVII: ART AND EAST ASIAN STUDIES ***Museum***
Arts of Japan ***Session Chair: Ankeney Weitz***
4:00 - 5:00 PM

Petya Andreeva ('13), East-Asian Studies
Seeds of the Past and Blossoms of Change: The Political Side of Musha-e Prints

Sally Klose ('12), Art
The Rise of the Landscape Genre in Takagawa Japan

Samantha Jaff ('11), Art
Takeuchi Keishu's Girl in School Uniform

Hoai Nguyen ('12), Art
Kiyohime Transforming Into a Serpent

Yin Fu ('11), Art
Kunisada's Oiran

SESSION XVIII: ART
Culture of Memory: Monuments and Memorials
4:00 - 6:00 PM

Smith
Session Chair: Veronique Plesch

4:00 pm **Nicolyna Enriquez ('11)**, Art
Memorializing the Dead in the Victorian Age

4:40 pm **Kristin Nissen ('11)**, Art
The Vel' d'Hiv' Monument in Paris: A Site of Political Memory

5:20 pm **Samantha Richens ('11)**, Art
The Renovation of Ellis Island: A Modern Pilgrimage

SESSION XIX: SCIENCE, TECHNOLOGY, AND SOCIETY
STS Poster Session
4:00 - 5:30 PM

Parker Reed, SSW
Session Chair: Jim Fleming

Boezeman, Emiko L. ('11)
From Humans to Machines: The Evolution of Japanese Communication Technologies and Their Influence on the Written Language

Bonnheim, Noah B. ('11)
The Search for a Hero: The Psychological Appeal of Geoengineering

Carter, Sarah M. ('11)
HAPPY PILLS: The Discovery, Development and Societal Implications of Antidepressant Technology

Crommett, Marisa K. ('11)
Communicating Health Care Options: Dominican Herbal Remedies in the Dominican Republic and New York

Eaton, Beta ('11)
Lobstering in Stonington, Connecticut and Stonington, Maine: Two Cases Demonstrating Necessary Cooperation Among Scientists, Fishermen, and Policy Makers for A Sustainable Fishery

Eberly, Nathan A. ('11)
Mediavision: Social Lessons Learned from Television History

Fleming, Amie R. ('11)
Urban Sprawl: Critiquing the Place of Community and Environment in Suburban America

Haver, Hana L. ('11)
Genes on Trial: An Evaluation of Gene Therapy in the Media

Koallick, Alexander M. ('11)
Energy, Environment, Embargo: A look at How the Oil Embargo of 1973-74 Changed American Perceptions of Environmental Protection

McNulty, Mark E. ('11)
Examining and Understanding Methods to Mitigate the Effects of Agricultural Oil Shock

Schnettler, Erin M. ('11)
Tipping Point to Turning Point: Horatio Crie and the Development of a Conservation Ethic in the Maine Lobster Industry

Sheppard, Danielle C. ('11)
Social Solutions for Climate Change: Cross Cultural Lessons from Denmark to the United States

Cizmar, Stephan J. ('11)
An Assessment of Technological Progress as a Catalyst of Economic Growth Through an Analysis of Two General Purpose Technologies: Electrification and the Internet

SESSION XX: JEWISH STUDIES
Maine Jewish History Project
4:00 - 6:00 PM

Robinson-Wormser Rooms, Miller Library
Session Chair: David Freidenreich

Miles de Klerk ('13), Jena Hershkowitz ('12), Spencer Kasko ('12), Madeline Kurtz ('14), Robyn Wardell ('11) and Margie Weiner ('12), Maine Jewish History Project
Exhibition Curators

SESSION XXI: CINEMA STUDIES
Cinema Studies Honors Thesis and Independent Study Presentations
4:40 - 6:15 PM

Whitney Room
Session Chair: Sarah Keller

4:40 pm **Matthew Von Vogt ('11)**, Independent Studies
Fritz Lang's Indian Epic: The Failure of Cinema and Modernity

5:00 pm **Elizabeth Fort ('11)**, English
Pedro Almodóvar: Control of Images through Images

5:20 pm **Oliviero Borgna ('11)**, English
Terrence Malick and Authorship in Film Art

SESSION XXII: ENGLISH
Senior Poetry Reading
7:00 - 8:00 PM

Robinson Room, Miller
Session Chair: Adrian Blevins

7:00 pm **Molly Bennett ('11), Blair Braverman ('11), Hannah Wagner ('11), Charlotte Wilder ('11), Duncan Hardock ('11) and Caitlin Vance ('11)**, Senior Poetry Reading
Senior Poetry Readings

SESSION XXIII: DEAN OF FACULTY
EPSCoR Presentations
7:30 - 9:00 PM

Parker Reed SSW
Session Chair: Whitney King

Andrew Maguire ('11), Biology
Site Fidelity in Libellulid Dragonflies on Johnson Pond

Sophie Sarkar ('11)
Buffernomics: Assessing the Motivations Behind Shoreline Residents' Willingness to Pay for Lake Conservation in East Pond and North Pond.

Malia Kawamura ('14)
The Use of the Dynamic Reservoir Simulation Model to Predict the Effect of Climate Change on the Thermal Structure of Lakes

Patrick McBride ('11)
Site Fidelity Behavior Displayed by the Libelluid *Sympetrum vicinum* on Johnson Pond

Josephine Thiele ('12)
Sediment Analysis for Great Pond, Long Pond and East Pond: Implications for Belgrade Lake Eutrophication

Kimberly Bittler ('11)
Zooplankton, Water Quality and Development in the Belgrade Lakes: A Case Study of the Family Sididae

Colby Undergraduate Research Symposium 2011
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Research Presentations

Friday, April 29

SESSION XXIV: HISTORY ***Whitney Room***
20th Century Environmental History ***Session Chair: Paul Josephson***
10:00 AM- 12:00 Noon

10:00 am **Robert Canning ('12)**, History
The Great Garbage Gyres. Ocean Pollution Through the 20th Century.

10:20 am **Anna Franzen ('11)**, History
The Solution to Pollution in not Dilution: U.S.-Canadian Cooperation to REduce Acid Rain in North America

10:40 am **Robyn Wardell ('11)**, History
Industrial Agriculture's Attempt to Mimic a Natural Process: The Case of the Commercial Pollination Industry

11:00 am **Emma Beck ('12)**, History
Mountaintop Removal Coal Mining: Stripping Appalachian of Its People, Resources, and Landscape

11:20 am **Amanda Reynolds ('12)**, History
The Beer Drinker's Dilemma: The Quest for an Environmentally-Friendly Beer

11:40 am **Stephen Zaharias ('11)**, History
Love Canal: What Really Happened

SESSION XXV: HISTORY ***Miller 8***
Introduction to History Presentations ***Session Chair: Elizabeth Leonard***
9:00 - 9:50 AM

Esther King ('13)
History Through Photography: Clemens Kalisces and the Arrival of European Refugees to New York City after World War II

Matthieu Nadeau ('12)
Al Brady, Public Enemy Number One: Maine's Forgotten Outlaw and the Folklore of Depression-Era Crime

Conor Brophy ('13)
The New Deal: A Savior of the American Way of Life, or a Drastic Change Towards Government Takeover

SESSION XXVI: CHEMISTRY ***Arey 5***
Senior Presentations ***Session Chair: Jeff Katz***
11:00 AM

Alex Boches ('11)
The Inhibition of the Transcription Factor AP-1 by the Anti Cancer Drug Laromustine

Becca Falender ('11)
TBA

Elaura Patton ('11)
The Conjugative Transfer of Multidrug Resistant Megaplasmid from Aeromonas salmonicida subspecies salmonicida to Vibrio cholerae

SESSION XXVII: GENERAL SESSION ***Hurd***
1:00 - 2:55 PM ***Session Chair: Phllip Nyhus***

1:30 pm **Christine Lydon ('11)**, Sociology
Alcoholism and the Family: Where Alcohol and Gender Intersect

1:50 pm **Michael Hempel ('11)**, International Studies
The Davis Inter-Cultural Dialogue Project: An Investigation into the Impact of the Mainstream Media in Germany on the Identities and Outlook of Young German Muslims

2:10 pm **Roja Nunna ('11) and Alyssa Belisle ('11)**, Mathematics
Modeling Paradoxical Motion Perception by Vestibular Patients

2:35 pm **Megan Booth ('11)**, Government
Credible Commitments or Manipulated Promises: The International Criminal Court in Uganda

SESSION XXVIII: PSYCHOLOGY ***Smith***
Psychology Honors Presentations ***Session Chair: Jennifer Coane***
1:00 - 2:30 PM

1:00 pm **Hali Castleman ('11)**, Psychology
The Effects of Incentive, Motivation, and Levels-of-Processing on Recall in Preschool Aged Children

1:20 pm **Lauren Tracy ('11)**, Psychology
Win Some, Lose Some: How Outcome Influences Subsequent Memory

1:50 pm **Kelsey Stratton ('11)**, Psychology
The Effect of Identification Style on Confidence Inflation in Eyewitness Testimony

SESSION XXIX: EAST ASIAN STUDIES ***Whitney***
East Asian Studies ***Session Chair: Tamae Prindle***
1:00 - 2:45 PM

1:00 pm **Ai Yamanaka ('11)**, East-Asian Studies
Sustaining Plates and Identities: The Socio-political Implications of 'Local' Food in Japan

1:20 pm **Nicholas Zeller ('13)**, East-Asian Studies
A Decayed Tooth: The Evil and Impermanence of Beauty in 'The Temple of the Golden Pavillion'

1:40 pm **Peter Graham ('12)**, East-Asian Studies
East Asian Studies Presentation

2:30 pm **Aliya Weiss ('12)**, East-Asian Studies
The Temple of the Golden Pavilion: A Freudian Reading

SESSION XXX: BIOLOGY ***Olin***
Biology Honors & Independent Studies Presentations ***Session Chair: Russell Johnson***
1:00 - 5:00 PM

1:00 pm **Sarah Flanagan ('11)**, Biology
Do Male Physiological Condition and Territory Quality Affect Female Mate Choice in the Brown Anole, *Anolis sagrei*?

1:15 pm **Ellsabeth Grasser ('11)**, Biology
The Neuroprotective Effects of Melatonin on *Uca pugilator* X-organ Cells Exposed to Glutamate Excitotoxicity

1:30 pm **David Havlicek ('11)**, Biology
Genetic Mapping of the Cell Competition Suppressor Gene su(comp)3L-2 in Drosophila

1:45 pm **Julianne Kowalski ('11)**, Biology
Phylogenic Analysis of Microorganisms: Characterizing Bacterial Relationships through Bioinformatics and Horizontal Gene Transfer

2:00 pm **Sarah Martinez ('11)**, Biology
The Effects of RNA Interference on TaABF1 and GAMyb Gene Expression in Barley Aleurone Cells

2:15 pm **Charles Wulff ('11)**, Biology
Innate Immunological Impact of r-(+)-Carvone, Tricaine (MS-222) and 2-phenoxyethanol on Zebrafish

2:30 pm **Benjamin Oakes ('11)**, Biology
Evaluating the Growth, Production and Soil Microbiota of a Novel Organic Hydroponic System for Greenhouse Tomatoes

SESSION XXXI: GERMAN AND RUSSIAN ***Lovejoy 215***
Sixth CBB-USM Russian Student Research Symposium (Note: In Russian) ***Session Chair: Julie de Sherbinin***
2:00 - 3:00 PM

2:00 pm **Peter Buttaro ('11)**, German/Russian
Shifting Seas: Water Symbolism in Bulgakov's Master and Margarita

2:20 pm **Kevin Lucas ('11)**, German/Russian
Not in the Light of Day: Light Imagery in Bulgakov's Master and Margarita

2:40 pm **Craig Zevin ('11)**, German/Russian
Walmart in Russia: What Went Wrong?

3:00 pm **James Lasher ('12)**, German/Russian
Night on Bald Mountain: Whose Is It?

SESSION XXXII: ECONOMICS ***Diamond 341***
Economics Honors Presentations ***Session Chair: Randy Nelson***
2:00 - 4:00 PM

2:00 pm **Aaron Kaye ('11)**, Economics
Legislative Compensation and Fiscal Performance in State Governments

2:00 pm **Aaron Kaye ('11)**, Economics
Legislative Compensation and Fiscal Performance in State Governments

2:30 pm **Benjamin Ogden ('11)**, Economics
Keeping Nuclear Programs From Becoming Nuclear Weapons: Game-Theoretic and Econometric Approaches

3:00 pm **C. Lee ('11)**, Economics
The Flypaper and Teflon Effect in China

3:30 pm **Anna Simeonova ('11)**, Economics
The Effect of European Union Accession on Foreign Direct Investment

SESSION XXXIII: RUSSIAN ***Lovejoy 215***
6th Annual CBB-USM Russian Student Research Symposium ***Session Chair: Julie de Sherbinin***
3:00 - 4:00 PM

Allison Brown ('12)
The Old in the New: Iconography, Lubok and Goncharova's Modernist Art

Ally Bolger ('13)
Chekhov's Secular Saint

Tom Letourneau ('13)
Painter V.G. Perov: Voice of the Needy

Nathan Lord ('12)
Political Themes in XIX-century Russian Art

Jason Parrett ('12)
Folktales in the Work of V.M. Vasnetsov

SESSION XXXIV: EDUCATION ***Diamond 122***
Inquiry and Practice in Education & Human Development ***Session Chair: Mark Tappan***
3:00 - 5:00 PM

3:00 pm **Karlyn Adler ('11)**, Independent Studies
Why Should it Matter to Me?: Teaching Affluent Students about Social Justice

3:30 pm **Hannah Bisgyer ('11)**, Education and Human Development
Learning Disabilities At Colby: A Preliminary Examination

4:00 pm **Sonia Mahabir ('11)**, Education and Human Development
Being Exotic: The Stories of Females of Color at Colby College

4:30 pm **M. Quinn ('11)**, Education and Human Development
Analyzing the Hidden Curriculum and How It Corresponds with the Predominant Social Class of the Students

SESSION XXXV: ENGLISH ***Hurd***
English Honors Presentations ***Session Chair: Laurie Osborne***
3:00 - 5:00 PM

3:00 pm **Catherine Hawkins ('11)**, English
The Biased White Reader: Reading, Revisiting, and Revising Racial Identity through Mark Twain's Pudd'nhead Wilson and Toni Morrison's Beloved

3:30 pm **Aleah Starr ('11)**, English

Failing Marx: Locating Class Issues and the Potential for Transgressive Pedagogy in Zora Neale Hurston's Their Eyes Were Watching God and Harper Lee's To Kill a Mockingbird

4:00 pm **Duncan Hardock ('11)**, English

Unpacking the Past: Collection and Recollection in Virginia Woolf and Walter Benjamin

4:30 pm **Elizabeth Hathaway ('11)**, English

The Marginalization of the Modern City in Lord Byron and the Shelleys' Authoritative Representations of Rome

SESSION XXXVI: GENERAL SESSION ***Smith***
Session Chair: Lynne Connor

3:00 - 4:45 PM

3:00 pm **Kendyl Sullivan ('11)**, Anthropology

Creativity in Education

3:30 pm **Alexandra Desaulniers ('11)**, Theater and Dance

The Vital Collaboration: A Perspective on Musical Theater as a Platform for Social Discourse

4:00 pm **Katelyn Ouimet ('11)**, Theater and Dance

Falling: An Exploration of Height, Weight, Space, and Gravity through Aerial Dance

SESSION XXXVII: LATIN AMERICAN STUDIES ***Whitney***
Latin American Studies ***Session Chair: Ben Fallaw***

3:00 - 4:00 PM

3:00 pm **Matthew Klegon ('11) and Amelia Fogg ('11)**, Latin American Studies

Independent Studies from Latin American Studies: Sustainable Agriculture in Belize and Argentine Nationalism and the Malvinas Islands

SESSION XXXVII: CHEMISTRY ***Keyes 105***
Senior Presentations ***Session Chair: Jeff Katz***

3:00 PM

Chris Ng ('11)

Characterization of DNA Interstrand Cross-Links Formed by Epichlorohydrin

Mark Ziffer ('11)

TBA

Dan Goldstein ('11)

TBA

Kwadwo Opoku-Nsiah ('11)

The synthesis and exploration of oxacalix[4]arenes with electron-withdrawing naphthyridine

Colby Undergraduate Research Symposium 2011
April 27 - April 29, Colby College, Waterville, Maine

Poster Sessions - Robins Room, Roberts

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.

Wednesday - No. 1 **Stephanie-Ann LaRose ('12), Psychology**
Is it a Wedding or a Funeral? The Effects of Emotion and Future Planning on Memory

Wednesday - No. 2 **Katherine Houser ('13), Anna Caron ('13), Kayleigh Monahan ('13) and Lauren McCrary ('12), Psychology**
Experiencing Nature: The Influence of Different Sensory Modalities on the Attention Restoration Effect

Wednesday - No. 3 **Melissa Krause ('12), Elizabeth Raney ('12) and Evan O'Neill ('12), Psychology**
Are Memories Contagious? The Differences between Individual and Collaborative Recall on Memory across Semantic, Phonological, and Hybrid Associative DRM Lists

Wednesday - No. 4 **Madeleine Cohen ('13), Adam Thompson ('13), Constance Jangro ('13) and Lisa Hoopes ('13), Psychology**
Attribution of Blame: Assessing the Effects of Attractiveness and Intention on Memory for Blame

Wednesday - No. 5 **Katherine Hallett ('13), Adam LaViolet ('13), Chelsea Ammons ('13) and Hillary Keach ('13), Psychology**
Own-Age Bias in Face Recognition of Emotional Stimuli

Wednesday - No. 5 **Sarah Kirker ('11), Mathematics**
Constructing a Heegaard Splitting of the Complement of Antoine's Necklace

Wednesday - No. 6 **Elizabeth Davis ('12), Katherine Gorman ('12) and Kenneth Peterson ('12), Psychology**
The Effects of Environment/Action Congruency on Imagination Inflation

Wednesday - No. 7 **Anika Lindemann ('12), Physics and Astronomy**
Symmetry and Stability in Network Dynamical Systems

Wednesday - No. 8 **Erika Hinman ('13), Cynthia Garvin ('12), Danielle Dellarco ('13) and Olisadumbi Okoh ('13), Psychology**
Physical Appearance and Personality Ratings

Wednesday - No. 9 **Alessandra Welker ('11), Psychology**
The Genetic and Molecular Markers of Choline Supplementation in the Hippocampus and Prefrontal Cortex of Female Rats.

Wednesday - No. 10

Julia Simons ('13), Cale Wardell ('13), Kenneth Peterson ('12) and Samuel Heim ('12), Psychology

Hot or Sweaty?

Wednesday - No. 11

Priscilla McCelvey ('13), Arvia Sutandi ('13) and Margaret Meyer ('13), Psychology

The A-Team: Assessing the Relationship Between Attractiveness, Altruism, and (Social) Aggression

Wednesday - No. 12

Shelley Kind ('13), Holly Mawn ('13), Jacqueline McLaughlin ('13) and Melanie Brown ('13), Psychology

The Effects of Source Quality and Pre-event Evaluation on Judgments of Blame

Wednesday - No. 13

Hannah Bisgyer ('11), Alyssa Lepore ('11) and Stephanie-Ann LaRose ('12), Psychology

What Happens When a Monster Bakes Cookies?: Memory of Actors and Events as a Function of Emotional Valence

Wednesday - No. 14

Derek Wise ('12) and Nicole Pickering ('12), Psychology

Effects of Gesture Training on Causal Understanding

Wednesday - No. 15

Arielle Saporta ('11) and Claire Grady ('12), Psychology

Effects of Theory of Mind on the Misinformation Paradigm

Wednesday - No. 16

Tory Gray ('11), Psychology

Exploring the Efficacy of Dietary Choline Supplementation in Preventing and Treating the Symptoms of Concussion

Wednesday - No. 17

Morganne Kraines ('11), Devin O'Brien ('12) and John DeAscentis ('11), Psychology

The Effects of Perspective on Conceptions of Punishments and Rewards in Preschoolers

Wednesday - No. 18

Emma Klein ('13), Eileen McGuire ('13), Nicholas Rimsa ('13) and Valerie Vesnaver ('13), Psychology

The effect of specific facial features on judgments of memory and likability

Wednesday - No. 19

Elisabeth Grasser ('11) and Jessica Blais ('12), Psychology

Cry Me a Beaver: False Memory for Mediated and Direct Word Lists

Wednesday - No. 20

Morganne Kraines ('11) and Nora McCall ('11), Psychology

Food for Mood: The Role of Dietary Choline in a Rat Model of Depression

Wednesday - No. 21

Anna Caron ('13) and Josef Broder ('13), Psychology

To Eat or Not To Eat: Whether 'Tis Easier In the Mind to Categorize Survival Information

Wednesday - No. 22

Arielle Saporta ('11) and Samantha Gillies ('11), Psychology

Implications of adolescent choline supplementation and gestational stress on depression

Wednesday - No. 23

Nora McCall ('11), Psychology

Nutrition for Cognition: Choline Supplementation in Male Rats Increases Working Memory Performance and Enhances Growth Factor Expression

Wednesday - No. 24

Adam LaViolet ('13), Psychology

Close But No Cigar: Access to Literal and Figurative Meanings of Idiomatic Expressions

Wednesday - No. 25

Shannon Kooser ('14) and Constance Jangro ('13), Psychology

Does Practice Make Perfect? A Comparison of Testing and Encoding Strategies on Immediate and Delayed Retention

Wednesday - No. 26

Natasha Atkinson ('11), Jessica Blais ('12) and Julia Engelsted ('11), Psychology

Fitting the Colby Personality: Predicting Subjective Well-Being Through Undergraduate Personality Comparisons

Wednesday - No. 27

Natasha Atkinson ('11), Psychology

Anhedonia and Choline Availability in a Rat Model of Schizophrenia

Wednesday - No. 28

Lisa Ha ('12), Kaitlyn Billington ('11) and Yuki Yoshida ('12), Psychology

It's All Your Fault: The Effect of Narcissism on the Interpretation of Ambiguous Feedback

Wednesday - No. 29

Andrew Bragg ('11), Annalyse Tamashiro ('12) and Megan Compaine ('12), Psychology

Effects of Post-Event Questioning and Cuing on Eyewitness Memory

Wednesday - No. 30

Carolin Maney ('12), Elizabeth DiMarco ('13), Josef Broder ('13) and Lindsay Hylek ('12), Psychology

Snap! Here Is My Decision and I Am Happy: Effects of Thought Speed, and Conscious Thinking on Enjoyment of Decision Making, and Post-Choice Satisfaction

Wednesday - No. 31

Michelle Mathal ('12), Jenifer Goldman ('12) and Ryan Trafton ('12), Psychology

The Effects Of Self-Awareness On Behavior

Wednesday - No. 33

Samantha Eddy ('13), Lauren Becker ('13), Rebecca Levenson ('13) and Sean Padungtin ('13), Psychology

The Ripple, Ripple Effect: how Racial Stereotypes Affect Blame to Distort Memory

Thursday - No. 1 **Nikolajs Batarags ('11), Religious Studies**
Spatial Analysis of NY Latvian Lutheran Church Parishioner Demographics

Thursday - No. 2 **Alex Hymanson ('12) and Jack Vernamonti ('11), Chemistry**
Directed Synthesis of Mixed N,O-hetera-calix[4]arenes

Thursday - No. 3 **Lloyd Liang ('13), Chemistry**
Synthesis of a Tetraazadioxacalix[6]arene through a Pentimeric Intermediate

Thursday - No. 4 **Bryce Pludow ('11), Geology**
Comparing Middle Permian and Early Triassic Environments: Mud Aggregates as a Proxy for Climate Change in the Karoo Basin, South Africa

Thursday - No. 5 **David Brazel ('12) and Daniel Echt ('11), Biology**
The Maintenance and Cycling of Plasmid-Mediated Drug Resistance in a Simulated Aquaculture Environment

Thursday - No. 6 **Emily Hilton ('11) and Jennifer Gemmell ('12), Biology**
The Nature of D-Pax2 Regulation of Crystallin During Eye Development in *Drosophila melanogaster*

Thursday - No. 7 **Byoungwook Jang ('14), Chemistry**
Developing Primers for Human DNA for Real-Time PCR Experiments

Thursday - No. 8 **Nikolajs Batarags ('11), Geology**
Depth Profile Analysis of Lithium Concentrations in Mid-Atlantic Crustal Feldspars

Thursday - No. 9 **Sarah Flanagan ('11), Biology**
Female Mate Choice and Male Physiological Condition in the Brown Anole, *Anolis sagrei*

Thursday - No. 10 **Amy Cantor ('11), Biology**
Nutrient Preferences in *Batrachochytrium dendrobatidis*, A Pathogenic Chytrid Fungus

Thursday - No. 11 **Olivia Lattanzi ('11), Biology**
The Effects of Varying Stimuli on Filial Imprinting in Domestic Chicks (*Gallus gallus*)

Thursday - No. 12 **Kaitlin Curran ('14), Elise Begin ('13) and Sarah Nalven ('13), Biology**
The Effect of Temperature on Growth of Two Strains of the Pathogenic Fungus, *Batrachochytrium dendrobatidis*

Thursday - No. 13 **Travis Wright ('12), Biology**
Characterizing the Zebrafish Kidney Phagocyte Respiratory Burst Response to Lyophilized *Staphylococcus aureus*

Thursday - No. 14 **Julianne Kowalski ('11) and Sean Sullivan ('11), Biology**
Environmental Implications of Horizontal Gene Transfer

Thursday - No. 15 **Dhokela Yzeiraj ('13), Geology**
Post Glacial Vegetation in Boulder Creek, Boulder, Colorado

Thursday - No. 16 **Nathan Katsiaficas ('12), Geology**
An Analysis of Geometric and Sedimentologic Characteristics of a Middle Permian Fluvial System, Karoo Basin, South Africa

Thursday - No. 17 **Daniel Hoshino ('11), Kathleen Hamre ('13) and Michael Stephens ('13), Environmental Studies**
Introduced Lionfish in the Caribbean and Their Detrimental Effects

Thursday - No. 18 **Timothy Becker ('11), Geology**
Preferred Orientations of Pyroxene in the Zagami Shergottite: Implications for Magmatic Emplacement

Thursday - No. 19 **Katherine Murray ('12), Jennifer Helm ('11) and Johanna Salay ('12), Environmental Studies**
How Can We Make Agriculture in the United States More Sustainable?

Thursday - No. 20 **Lauren Hendricks ('11), Environmental Studies**
Atlas of Maine: Ecoregions, Landcover and Conserved Land in Downeast Maine

Thursday - No. 21 **Peter Smithy ('12), Environmental Studies**
Atlas of Maine: Conservation Lands of Downeast Maine

Thursday - No. 22 **Catherine Raker ('13) and Zakary Jaques ('13), Environmental Studies**
Climate Change and the Great Barrier Reef

Thursday - No. 23 **Larissa Lee ('13), Environmental Studies**
Atlas of Maine: Forest and Fresh Water Habitat Suitability of Downeast Maine

Thursday - No. 24 **Sophie Sarkar ('11), Environmental Studies**
Atlas of Maine: Cell Phone Towers and Population Density in the Downeast Maine

Thursday - No. 25 **Lauren Hendricks ('11), Kelth Love ('13) and Molly Susla ('13), Environmental Studies**
Impact of Wind Turbines on Birds

Thursday - No. 26 **Daniel Hoshino ('11) and Meghan Cornwall ('11), Environmental Studies**
Evaluating Marine Protected Areas: Case Studies in Australia and Tanzania

Thursday - No. 27 **Sarah Sorenson ('11), Environmental Studies**
Atlas of Maine: National Priority List (NPL) Sites in Downeast Maine

Thursday - No. 28 **Jennifer Helm ('11), Andrew Maguire ('11) and Lauren Hendricks ('11), Environmental Studies**
Agroforestry Practices in Sumatra

Thursday - No. 29 **Noah Teachey ('13), Environmental Studies**
Atlas of Maine: Shellfish, Eelgrass, and Shorebird Habitat of Downeast Maine

Thursday - No. 30 **Garrison Beck ('13), Environmental Studies**
Atlas of Maine: Road Networks in Downeast Maine

Thursday - No. 31 **Kelth Love ('13) and Michael Stephens ('13), Environmental Studies**
Human Exposure to Agent Orange and Resulting Health Impacts

Thursday - No. 32 **Sarah Holmes ('13), Environmental Studies**
Atlas of Maine: Hurricane Surges and Flood Hazard Areas in Downeast Maine

Thursday - No. 33 **Emily Ten Eyck ('13), Environmental Studies**
Atlas of Maine: Locations of Police Stations and Fire Stations in the Downeast Region of Maine

Thursday - No. 34 **Jillian Howell ('12), Environmental Studies**
Atlas of Maine: Health Services in Downeast Maine

Thursday - No. 35 **Catherine Raker ('13), Environmental Studies**
Atlas of Maine: Locations of Schools in Downeast Maine

Thursday - No. 36 **Brynna Patel ('11), Environmental Studies**
Atlas of Maine: Conserved Wetlands in the Downeast Regoln of Maine

Thursday - No. 37 **Alyssa Marquez ('11), Brittany Hughes ('12) and Kristen Erickson ('12), Psychology**
The Effects of Maternal Care on Neophobic Traits in Rats

Thursday - No. 38 **Sarah Flanagan ('11), Juliette Gorson ('11) and Matthew Silverman ('12), Environmental Studies**
Destruction and Development: The Impacts of Tourism on Mangrove Forests.

Thursday - No. 39 **Kaitlyn Bernard ('13), Environmental Studies**
Atlas of Maine: Elevation of Downeast Maine

Thursday - No. 40 **Jillian Blouin ('13), Environmental Studies**
Atlas of Maine: Potential Sea Level Rise in Downeast Maine

Thursday - No. 41 **Allison Brown ('12), German/Russian**
The Old in the New: Iconography, Lubok and Goncharova's Modernist Art

Thursday - No. 42 **Matthew Silverman ('12) and Bjorn Knutson ('13), Environmental Studies**
Tributyltin Exposure is Linked to Obesity

Thursday - No. 43 **Jason Parrett ('12), German/Russian**
Folktales in the Work of V.M. Vasnetsovâ

Thursday - No. 44 **Nicholas Papanastassiou ('13), Environmental Studies**
Atlas of Maine: Vernal Pools and Wetlands in Downeast Maine

Thursday - No. 45 **Abigail Collett ('11), Chemistry**
Examination of Smad3's Role in Mediating Cell Invasion, and Implications in Breast Cancer Progression

Thursday - No. 46 **Allison Bolger ('13), German/Russian**
"Chekhov's Secular Saint"

Thursday - No. 47 **Nathan Lord ('12), German/Russian**
Political Themes in XIX-century Russian Art

Friday - No. 1 **Danielle Sheppard ('11), Science, Technology, and Society**
Sustainable Solutions to Climate Change Through Public Action: An Ethnographic Case Study of Bicycle Use in Copenhagen, Denmark

Friday - No. 2 **Eileen McGuire ('13) and Logan Hunter ('11), Theater and Dance**
Applied Contemporary Duet Choreographic Study Influenced by Contact Improvisation

Friday - No. 3 **Thomas Meehan ('12) and Elliot Mermel ('12), Science, Technology, and Society**
Healthcare Entrepreneurship: Outsourcing Radiology Related Diagnostics in an Aging Population

Friday - No. 4 **Brynna Patel ('11), International Studies**
Community Participation in River and Stream Rehabilitation, Pune, India

Friday - No. 5 **Christopher Ng ('11), Morgan Lingar ('13) and Vanesa Silvestri ('12), Chemistry**
Mechanisms of Cytotoxicity of Bifunctional Epoxide Cross-linking Agents

Friday - No. 6 **Allyson Cheever ('11) and Sarah Harmon ('12), Computer Science**
Searching for the Perfect Model: Velocity Response Curve Analysis of Circadian Clock Models for the Fruit Fly *Drosophila melanogaster*

Friday - No. 7 **Catherine Raker ('13), Environmental Studies**
Factors Influencing EPA Sites along the Hudson River

Friday - No. 8 **Cassandra Coleman ('11), Alexander Boches ('11), Joseph Bellairs ('11) and Roxanne Ghazvinian ('11), Chemistry**
Carbamoylating Activity Associated with the Antitumor Prodrug Laromustine Inhibits Angiogenesis in Vitro by Inducing ASK1-dependent Endothelial Cell Death

Friday - No. 9 **Eleanor Hoyt ('11), Geology**
Rheological Properties of Folded Layers During Natural Deformation as Determined From Quantitative Geometric Analysis of Fold Shape

Friday - No. 10 **Andrew Thomas ('11), Chemistry**
Convicted Offender DNA Analysis at the Maine State Police Crime Lab

Friday - No. 11 **Erin Schnettler ('11), Biology**
Identification of Parathyroid-related Protein Gene (PTHrP) in Eastern Brook Trout (*Salvelinus fontinalis*) as a Non-Regulatory Factor in the Response to Nutritional Hyperparathyroidism

Friday - No. 12 **Alexander Storer ('12), Biology**
The Effect of Opsonization on Phagocytosis of Bacteria by Zebrafish Kidney Neutrophils

Friday - No. 13 **Christine Reynolds ('12), Biology**
Investigation of D-Pax2 Function in *Drosophila* Bristle Development by RNAi Knockdown

Friday - No. 14 **Daniel Hoshino ('11), Biology**
The Activity of Overwintering Ground Arthropods

Friday - No. 15 **Ashley Johnson ('13), Biology**
The Respiratory Burst Activity in Zebrafish at Two Different Temperatures

Friday - No. 16 **Hannah Lafleur ('11) and Corey Reichler ('13), Environmental Studies**
Human-Carnivore Conflict in Developing Countries

Friday - No. 17 **Ramsey Meigs ('11), Geology**
The Downcutting History of Martin Stream through Paleo-Kennebec River Deposits, Hinckley, Maine, U.S.A.

Friday - No. 18 **Hana Haver ('11), Biology**
Magainin Antimicrobial Peptide Evaluated as a Candidate for AAV Gene Therapy for Cystic Fibrosis Airway Epithelium

Friday - No. 19 **Patrick McBride ('11), Andrew Maguire ('11) and Sarah Flanagan ('11), Biology**
Site Fidelity Behavior Displayed by the Libelluid *Sympetrum vicinum* on Johnson Pond

Friday - No. 20 **William Bloomhardt ('12) and Meghan Cornwall ('11), Environmental Studies**
Human Predator Conflict in Developed Countries

Friday - No. 21 **Emily Ten Eyck ('13), Environmental Studies**
Safety at Colby College: Visibility of Emergency Call Boxes with Blue Lights on Campus

Friday - No. 22 **William Supple ('12) and Jazmine Russell ('13), Environmental Studies**
The Effects of Pollution on Australian Coral Reef Biodiversity

Friday - No. 23 **Jillian Howell ('12), Environmental Studies**
Access to Green Space Across Race in Boston

Friday - No. 24 **Nicholas Papanastassiou ('13) and Sarah Holmes ('13), Environmental Studies**
Spatial Analysis of Cardiovascular Disease Incidence and Potential Environmental Factors in the California Bay Area

Friday - No. 25 **Larissa Lee ('13) and Virginia Keesler ('13), Environmental Studies**
Mechanism of Fructose as an Obesogen

Friday - No. 26 **Sarah Sorenson ('11) and Emily VanWyk ('11), Environmental Studies**
Arsenic in Chicken Feed: A Threat to Human Health

Friday - No. 27 **Elizabeth Eaton ('11) and Amelia Fogg ('11), Environmental Studies**
The Human Health Effects of Harmful Algal Blooms

Friday - No. 28 **Sarah Sorenson ('11), Environmental Studies**
Racial Demographic Trends in the District of Columbia: 1950-2010

Friday - No. 29 **Garrison Beck ('13) and Larissa Lee ('13), Environmental Studies**
Colby Recreational Trail System

Friday - No. 30 **Kelly Roche ('11), Matthew Cheever ('12) and Yiyuan Qin ('12), Environmental Studies**
The Obesogenic Impacts of Fructose-Sweetened Beverages Consumed by Children

Friday - No. 31 **Leah Turino ('11) and Carly Hallowell ('13), Environmental Studies**
The Effects of Mercury on Pregnant Women: The Relationship between Seafood Consumption, Mercury Exposure, and Fetal Development

Friday - No. 32 **Julia Bruss ('11), Psychology**
Transitional Stressors: Reactivity to Social and Future-Career Stressors in Freshmen and Senior College Students

Friday - No. 33 **Sarah Holmes ('13) and Katherine Muto ('11), Environmental Studies**
Possible Long-term Impacts of Oral Contraceptive Use on Female Mate Choice

Friday - No. 34 **M. Henderson ('11), Matthew LaPine ('13) and Peter Smithy ('12), Environmental Studies**
Potential Impacts of Renewable Energy Infrastructure on Fisheries

Friday - No. 35 **Theodore Papademetriou ('11), Environmental Studies**
Atlas of Maine: Transportation in Downeast Maine

Friday - No. 36 **Allyson Cheever ('11) and Anne Geraghty ('11), Environmental Studies**
Pollutants in Drinking Water

Friday - No. 37 **Shreya Balakrishna ('12) and Andrew Thomas ('11), Environmental Studies**
The Carcinogenic Effects and Human Health Costs of Arsenic Exposure

Friday - No. 38 **Molly Susla ('13) and Kelly Kneeland ('13), Environmental Studies**
Bisphenol A as an Obesogen

Friday - No. 39 **Olivia Lattanzi ('11) and Abigail Collett ('11), Environmental Studies**
Heterocyclic Amines as Carcinogens in Cooked Meat

Friday - No. 40 **Peter Smithy ('12) and Noah Teachey ('13), Environmental Studies**
Renewable Energy in Waterville: An Analysis of Possible Biomass Facilities and Energy Load

Friday - No. 41 **Sophie Sarkar ('11), Environmental Studies**
Location Location Location: An Analysis of the Distribution of Shoreline Residents Around East Pond and North Pond

Friday - No. 42 **Kaitlyn Bernard ('13) and Jillian Blouin ('13), Environmental Studies**
The Effects of Chemical Obesogens on Cardiac Function

Friday - No. 43 **Sophie Sarkar ('11) and Tamer Hassan ('11), Environmental Studies**
The Effects of Cell Phone Radiation on Male Fertility and the Brain

Friday - No. 44 **Cordelia Roberts ('13) and Kathryn Lee ('13), Environmental Studies**
Are Phthalates A Human Obesogen? An Examination Of Epidemiological Studies Suggesting The Link Between Phthalate Exposure And Obesity

Friday - No. 45 **Nina Hatch ('13) and Lindsay Garrard ('13), Environmental Studies**
Impacts of Chemical Obesogens on Thyroid Signaling

Friday - No. 46 **Lauren Hendricks ('11), Environmental Studies**
Modeling Habitat Suitability for Moose in Maine

Friday - No. 47 **Kaitlyn Bernard ('13) and Jillian Blouin ('13), Environmental Studies**
Analysis of Environmental Health Strategy Center Membership

Colby Undergraduate Research Symposium 2011
April 27 - April 29, Colby College, Waterville, Maine

Associated Sessions

Thursday, December 9, 2010

BIOLOGY ***Olin 223***
Animal Behavior Presentations ***Session Chair: Cathy Bevier***
1:00 - 4:00 PM

Ashley Oliver ('12)	The Ability of Crayfish to Associate Food Abundance with Habitat
William Supple ('12)	Associative Learning in the Aquatic Gastropod *Helisoma*
Kristen Merrill ('12)	Feeding Behavior of Caterpillars of Painted Lady Butterflies, *Vanessa cardui*, and its Relation to Adult Fitness
Matt Vivero ('11)	The Effects of Ant Pheromones on Competitive Foraging Behavior
Sarah Harmon ('12)	Ultrasonic Vocalizations in Mice
Katie Palano ('12)	Lighting Effects on Predator Evasion Behaviors in the Sand Fiddler Crab, *Uca pugilator*
Abigael Cheruiyot ('12)	Do House Crickets, *Acheta domesticus*, Recognize Crickets Injected with LPS?
Andrew Thomas ('11)	Behavioral Modification of *Acheta domesticus* After Immune System Challenge
Benjamin Joslin ('12)	Does Exposure to Pesticide Diminish the Escape-response in the Earthworm?
Jenna Sood ('11)	Effects of Triazicide on Flight Capacity of Painted Lady Butterflies, *Vanessa cardui*
Loni Pisani ('11)	Effects of the Environmental Pollutants BPA, Arsenic, and Glyphosate, on Territorial Aggression in Male Fiddler Crabs, *Uca pugilator*
Jaclyn Johnson ('12)	The Effects of Phytoestrogen Exposure on the Duration, Frequency, and Intensity of Aggressive Behavior in the Sand Fiddler Crab, *Uca pugilator*
Karyn King ('12)	The Effects of Phytoestrogens on Aggressive Behavior in male *Betta splendens* and of Chrysin on Aggressive Behavior in Female *Betta splendens*
Jennifer Sim ('11)	Does Estradiol Affect Aggressive Response in Male *Betta spendens*?
Natasha Atkinson ('11)	The Effect of Endosulfan Exposure on Predatory and Locomotor Behaviors of Red-spotted Newts, *Notophthalmus viridescens*

Thursday, January 27

RELIGIOUS STUDIES ***Lovejoy 344***
Topics in Maine's Jewish History Presentations ***Session Chair: David Freidenreich***

Isadora Alteon ('13)	Prosperity is Just around the Corner: Migration Patterns of Waterville's Jews

Hannah Dhonau ('14)	From Away: The Experiences of Gisèle Baroukel Miller in Waterville
Amy Eklund ('11)	Jews in Vacationland
Miles de Klerk ('13)	Change over Time: Jewish-Gentile Relations in Waterville
Yichen Jiang ('13)	Jewish Philanthropy in 1950s Waterville
Kimiko Kossler ('12)	The Jews of Skowhegan: A History
Madeline Kurtz ('14)	Food and Jewish Identity in Waterville
Lyoe Lee ('11)	Jewish Manufacturers in Maine: The Gearshifters
Tendai M'ndange-Pfupfu	Jews in Waterville in the Interwar Years: Occupations, Affluence, and the Career Choices of Children
Adam Thompson ('13)	Key Factors in the Transmission of Jewish Identity during the Postwar Years

Monday, March 28

PHYSICS AND ASTRONOMY — ***Keyes 102***
Physics and Astronomy Senior Seminars — ***Session Chair: Robert Bluhm***
3:00 PM

Colin Anson ('11)	The Physics Behind Common Spectroscopic Techniques
Elizabeth Chang ('11)	An External Cavity Diode-Laser System at 750 nm

Monday, April 4

PHYSICS AND ASTRONOMY — ***Keyes 102***
Physics and Astronomy Senior Seminars — ***Session Chair: Robert Bluhm***
3:00 PM

Zach Currier ('11)	A Pulsed Diode-Laser System at 960 nm
Scott Galica ('11)	Radiofrequency Excitation of an Ultra-Cold Plasma

Wednesday, April 6

SOCIOLOGY — ***Diamond Atrium***
Learning by Giving Poster Presentations — ***Session Chair: Tom Morrione***

Caitlin Hewett ('12), Cameron Cox ('11) and Sara Ramsay ('11), Sociology
Children's Center of Augusta - Making Classrooms More Accessible

Amanda Ferguson ('12), Diane Leinen ('11), Abigail Myers ('11) and Ellen Ramage ('11), Sociology
Literacy Volunteers - Learning by Reading!

Hilary Walker ('11), Lisa Kaplan ('13) and Stefanie Solar ('11), Sociology
Maine Children's Home for Little Wanderers - Send a Kid to Camp to Camp-- it is The Right Thing To Do!!

Kristen Raymond ('11), Heather Arvidson ('11) and Amanda Schmitt ('11), Sociology
Sexual Assault Crisis and Support - Sound of Silence: Giving Voice to the Voiceless

Scott Hill ('11), Theo Papademetriou ('11) and Geri Morris ('11), Sociology
Viles Arboretum - Working to Increase Membership

Monday, April 11

PHYSICS AND ASTRONOMY
Physics and Astronomy Senior Seminars
3:00 PM

Keyes 102
Session Chair: Robert Bluhm

Ali Lavine ('11)	Introduction to Short Gamma-Ray Bursts
Nate Eberly ('11)	Advection in Reaction-Diffusion Systems

Friday, April 15

THEATER AND DANCE
New Works Festival
7:30 PM

Strider Theater
Session Chair: Lynne Connor

Original Music

John Descentis	Port of Call
Brian Doolittle ('14)	Lullaby for the Broken Hearted
David Furman ('12)	Contact
Petey Randall ('12)	Hip Hop A History
Brandon Nieuw ('12)	Party Now Remix
Will Hochman ('14)	A Wholly Sweet Beat
Brian Palmer ('14)	Beowolf

Original Plays

Ahmed Asi ('13)	Din Raat
Shelley Kind ('13)	The Stars

Saturday, April 16

THEATER AND DANCE
New Works Festival
7:30 PM

Strider Theater
Session Chair: Lynne Connor

Original Choreography - Defining Edges

Ahmed Asi ('13)	Megan (Petie) Booth
Elizabeth Davidson ('11)	Hannah DeAngelis
Alex Desaulniers ('11)	Lindsay DiBartholomeo
Rachel Gleicher ('11)	Logan Hunter
Rhiannon Ledwell ('12)	Delaney McDonough
Mika Mintz ('14)	Brandon Nieuw
Katie Ouimet ('11)	Alison Reader
Abby West ('11)	Sujie Zhu
Natasha Ziv ('14)	

Original Dance

Katie Ouimet ('11)	Falling

Original Music

John Descentis	Port of Call
Brian Doolittle ('14)	Lullaby for the Broken Hearted
David Furman ('12)	Contact

Petey Randall ('12)	Hip Hop A History
Brandon Nieuw ('12)	Party Now Remix
Will Hochman ('14)	A Wholly Sweet Beat
Brian Palmer ('14)	Beowolf
	Original Plays
Michael Langley ('13)	Office Hours
Michael Trottier ('12)	Rot

Monday, April 18

PHYSICS AND ASTRONOMY
Physics and Astronomy Senior Seminars
3:00 PM

Keyes 102
Session Chair: Robert Bluhm

Eric Freeman ('11)	Locomotion at the Interface
Sam Axelrod ('11)	Investigations of Dark Matter

Wednesday, April 20

HISTORY
Introduction to History Presentations
9:00 - 9:50 AM

Miller 8
Session Chair: Elizabeth Leonard

Sean Michael ('12)	Historical Accuracy in Film and Television: Leading Man or Background Character?
Caley Robertson ('11)	Grandfathers of the Nation: The Presidents that Preceded George Washington

Friday, April 22

CHEMISTRY
Senior Presentations
3:00 PM

Keyes 105
Session Chair: Jeff Katz

Jo Bellairs ('11)	The effects of Laromustine on Apoptotic Gene Expression in Cancerous Cell Lines
Solomon Gisemba ('11)	Thermal Conversion of Woody Biomass to Biofuels and Chemicals
Roxy Ghzvinian	Carbamoylating Activity of Laromustine Associated with ASK1 Dependent Endothelial Cell Death

GEOLOGY
Geology Honors Presentations
6:00 PM

SSW
Session Chair: Bob Gastaldo

Timothy Becker ('11)	EBSD Analysis of Pyroxenes in the Zagami Shergottite: Implications for Emplacement Mechanism
Eleanor Hoyt ('11)	Rheological Properties of Folded Layers During Natural Deformation as Determined from Quantitative Geometric Analysis of Fold Shape
Bryce A. Pludow ('11)	Comparing Middle Permian and Early Triassic Environments: Mud Aggregates as a Proxy for Climate Change in the Karoo Basin, South Africa

HISTORY
Introduction to History Presentations
9:00 - 9:50 AM

Miller 8
Session Chair: Elizabeth Leonard

Tucker Crater ('13)	The Ethics of Nuclear Weapons
Charlotte Wiesenberg ('13)	The Great Schoolhouse Rock: What Does it Really Teach our Children?
Luke Doherty ('13)	The Olympics as Propaganda

CHEMISTRY
Senior Presentations
11:00 AM

Arey 5
Session Chair: Jeff Katz

Colin Anson ('11)	Investigating the Effect of Substituents on the Shielding Induced by Aromatic Ring Currents
Mengfei Zhang ('11)	The Synthetic Scope of Acetylenes in SNAr Reactions and Applications in Oxacalix[4]arene Synthesis
Tim Sciore ('11)	TBA

Monday, April 25

ANTHROPOLOGY
Culture, Mobility, Identity: Encounters in the African Diaspora Presentations
1:00 - 2:15 PM

Diamond 243
Session Chair: Daniel Mains

Georgina Hurst ('13)	Self-Conception as Defined by Cultural Context: African Diaspora vs. American Diaspora
Jessica Pires ('13)	Strangers in Their Own Land: African-American Repatriation in Ghana
Eva Valladares Anton ('13)	Africa in Cuba: Interpreting the African Diasporic Dimension in Cuba Traditions and Rhythms
Jalene Regassa ('13)	The Question of Identity: Relations Between Africans and African-Americans
Lauren Lacy ('14)	The Cinematic Presentation of Modern Immigration through the African Diaspora

PHYSICS AND ASTRONOMY
Physics and Astronomy Senior Seminars
3:00 PM

Keyes 102
Session Chair: Robert Bluhm

Qingyi Wang ('11)	Quantum Mechanics Involved in Photosynthesis
Ben Cunkelman ('11)	Colloidal Flow in a Fine Channel

HISTORY
Introduction to History Presentations
9:00 - 9:50 AM

Miller 8
Session Chair: Elizabeth Leonard

Eoin McCarron ('13)	Questions of Identity on the Field of Battle: Irish Soldiers in World War I
Kyle Migliorini ('13)	Providence and Progressivism: The Motivations behing Woodrow Wilson's Domestic Policies
Alexandre Caillot ('13)	Clash or Arms, Clash of Cultures: The First Crusade

Tuesday, April 26

RELIGIOUS STUDIES
Death and Spirituality Presentations
9:30 - 10:45 AM

Lovejoy 344
Session Chair: Debra Campbell

Sierra Medling ('12)	God Wants to Eat Your Brains: Spirituality in Zombie Horror Films
Lizzie Poteet ('11)	Who Do Voodoo? You Do: Voodoo in Modern Imagination
Jack Vihstadt ('12)	Eternally Missed, Eternally Connected: Death Logging on to the Social Network

Wednesday, April 27

HISTORY
Introduction to History Presentations
9:00 - 9:50 AM

Miller 8
Session Chair: Elizabeth Leonard

Delaney McDonough ('13)	A Well-Hidden response: Psychology and the Catholic Church
Tagg Martin ('13)	Golf and its Socioeconomic Impact in the 20th Century
Robert Barnum ('12)	Conservationism and Capitalism in the American West

ANTHROPOLOGY
Culture, Mobility, Identity: Encounters in the African Diaspora Presentations
1:00 - 2:15 PM

Diamond 243
Session Chair: Daniel Mains

Annika Moline ('14)	Community: Comparing and Contrasting the Somali Experience in New England and the Midwest
Lindsay Hylek ('12)	The African Diaspora and the Religious and Cultural Movement of Rastafarianism
Sam Carter ('11)	An International Pastime: The African Diaspora in Major League Baseball
Julia Knoeff ('13)	Tracing the Mangue Beat: Brazilian Hip-Hop as an Identity Within the African Diaspora
Sarah Richard ('12)	Incorporation of the African Diaspora into Mainstream France

Thursday, April 28

RELIGIOUS STUDIES
Death and Spirituality Presentations
9:30 - 10:45 AM

Lovejoy 344
Session Chair: Debra Campbell

Dennis Gallagher ('12)	Hospice Care: An Opportunity for Spiritual Healing
Ellen Ramage ('11)	AIDS and Catholicism: Trials and Responses
David Welsh ('12)	Free Speech v. Funerals: Snyder v. Phelps & the Sacred Nature of Funerals

SCIENCE, TECHNOLOGY, AND SOCIETY
STS Poster Session
4:00 - 5:30 PM

Parker Reed, SSW
Session Chair: Jim Fleming

Boezeman, Emiko L. ('11)	From Humans to Machines: The Evolution of Japanese Communication Technologies and Their Influence on the Written Language
Bonnheim, Noah B. ('11)	The Search for a Hero: The Psychological Appeal of Geoengineering
Carter, Sarah M. ('11)	HAPPY PILLS: The Discovery, Development and Societal Implications of Antidepressant Technology
Crommett, Marisa K. ('11)	Communicating Health Care Options: Dominican Herbal Remedies in the Dominican Republic and New York City
Eaton, Beta ('11)	Lobstering in Stonington, Connecticut and Stonington, Maine: Two Cases Demonstrating Necessary Cooperation Among Scientists, Fishermen, and Policy Makers for A Sustainable Fishery
Eberly, Nathan A. ('11)	Mediavision: Social Lessons Learned from Television History
Fleming, Amie R. ('11)	Urban Sprawl: Critiquing the Place of Community and Environment in Suburban America
Haver, Hana L. ('11)	Genes on Trial: An Evaluation of Gene Therapy in the Media
Koallick, Alexander M. ('11)	Energy, Environment, Embargo: A look at How the Oil Embargo of 1973-74 Changed American Perceptions of Environmental Protection
McNulty, Mark E. ('11)	Examining and Understanding Methods to Mitigate the Effects of Agricultural Oil Shock
Schnettler, Erin M. ('11)	Tipping Point to Turning Point: Horatio Crie and the Development of a Conservation Ethic in the Maine Lobster Industry
Sheppard, Danielle C. ('11)	Social Solutions for Climate Change: Cross Cultural Lessons from Denmark to the United States
Cizmar, Stephan J. ('11)	An Assessment of Technological Progress as a Catalyst of Economic Growth Through an Analysis of Two General Purpose Technologies: Electrification and the Internet

JEWISH STUDIES
Maine Jewish History Project
4:00 - 6:00 PM

Robinson-Wormser Rooms, Miller Library
Session Chair: David Freidenreich

Miles de Klerk ('13), Jena Hershkowitz ('12), Spencer Kasko ('12), Madeline Kurtz ('14), Robyn Wardell ('11) and Margie Weiner ('12), Jewish Studies
Exhibition Curators

ENGLISH
Senior Poetry Reading
7:00 - 8:00 PM

Robinson Room, Miller
Session Chair: Adrian Blevins

7:00 - 8:00 PM **Molly Bennett ('11), Blair Braverman ('11), Hannah Wagner ('11), Charlotte Wilder ('11), Duncan Hardock ('11), Caitlin Vance ('11), Hopestill Kraft ('11), Nicole Ziemiak ('11) and Coline Delaporte ('11), English**
Senior Poetry Readings

DEAN OF FACULTY
EPSCoR Presentations
7:30 - 9:00 PM

Parker Reed SSW
Session Chair: Whitney King

Oral Presentations

Sophie Sarkar ('11) — Title:Buffernomics: Assessing the Motivations Behind Shoreline Residents' Willingness to Pay for Lake Conservation in East Pond and North Pond.

Andrew Maguire ('11) — Site Fidelity in Libellulid Dragonflies on Johnson Pond

Poster Presentations

Malia Kawamura ('14) — The Use of the Dynamic Reservoir Simulation Model to Predict the Effect of Climate Change on the Thermal Structure of Lakes

Patrick McBride ('11) — Site Fidelity Behavior Displayed by the Libelluid *Sympetrum vicinum* on Johnson Pond

Katherine Murray ('12) — How Can We Make Agriculture in the United States more Sustainable?

Sophie Sarkar ('11) — Buffernomics: Assessing the Motivations Behind Shoreline Residents' Willingness to Pay for Lake Conservation in East Pond and North Pond.

Josephine Thiele ('12) — Sediment Analysis for Great Pond, Long Pond and East Pond: Implications for Belgrade Lake Eutrophication

Kimberly Bittler ('11) — Zooplankton, Water Quality and Development in the Belgrade Lakes: A Case Study of the Family Sididae

Friday, April 29

HISTORY
Introduction to History Presentations
9:00 - 9:50 AM

Miller 8
Session Chair: Elizabeth Leonard

Esther King ('13) — History Through Photography: Clemens Kalisces and the Arrival of European Refugees to New York City after World War II

Matthieu Nadeau ('12) — Al Brady, Public Enemy Number One: Maine's Forgotten Outlaw and the Folklore of Depression-Era Crime

Conor Brophy ('13) — The New Deal: A Savior of the American Way of Life, or a Drastic Change Towards Government Takeover

CHEMISTRY
Senior Presentations
11:00 AM

Arey 5
Session Chair: Jeff Katz

Alex Boches ('11) — The Inhibition of the Transcription Factor AP-1 by the Anti Cancer Drug Laromustine

Becca Falender ('11) — TBA

Elaura Patton ('11) — The Conjugative Transfer of Multidrug Resistant Megaplasmid from Aeromonas salmonicida subspecies salmonicida to Vibrio cholera

RUSSIAN
6th Annual CBB-USM Russian Student Research Symposium
3:00 - 4:00 PM

Lovejoy 215
Session Chair: Julie de Sherbinin

Poster Presentations

Allison Brown ('12)	The Old in the New: Iconography, Lubok and Goncharova's Modernist Art
Ally Bolger ('13)	Chekhov's Secular Saint
Tom Letourneau ('13)	Painter V.G. Perov: Voice of the Needy
Nathan Lord ('12)	Political Themes in XIX-century Russian Art
Jason Parrett ('12)	Folktales in the Work of V.M. Vasnetsov

CHEMISTRY
Senior Presentations
3:00 PM

Keyes 105
Session Chair: Jeff Katz

Chris Ng ('11)	Characterization of DNA Interstrand Cross-Links Formed by Epichlorohydrin
Mark Ziffer ('11)	TBA
Dan Goldstein ('11)	TBA
Kwadwo Opoku-Nsiah ('11)	The synthesis and exploration of oxacalix[4]arenes with electron-withdrawing naphthyridine

Monday, May 2

ENVIRONMENTAL STUDIES
Environment and Society Presentations
10:00 - 10:50 AM

Ostrove Auditorium, Diamond
Session Chair: Philip Nyhus

Olivia A. Baribeau ('14), David C. Murphy ('14), Erik A. Douds ('14) and Amanda L. Lavigueur ('13), Environmental Studies
Examining Factors Influencing Total Fertility Rates Worldwide

M. Tierney Dodge ('14), Erin A. Love ('14), Sarah V. Madronal ('14) and Molly E. Susla ('13), Environmental Studies
What Factors Influence the Success of CSAs in Different Areas?

Christopher Eden ('14), Bjorn Knutson ('13) and Elliot Marsing ('14), Environmental Studies
Why are Some Fisheries More Over Exploited Than Other Fisheries?

PHYSICS AND ASTRONOMY
Physics and Astronomy Senior Seminars
3:00 PM

Keyes 102
Session Chair: Robert Bluhm

Dustin Hickey ('11) Interstellar Dust and its Effects on Modeling Protostellar Objects

MATHEMATICS
Mathematics Honors Presentation
4:00 PM

Mudd 405
Session Chair: Jim Scott

Sarah Kirker ('11), Mathematics
TBA

HISTORY — *Miller 8*

Introduction to History Presentations — ***Session Chair: Elizabeth Leonard***

9:00 - 9:50 AM

Sam West ('13)	From Blues to Jazz: The Factors that Led to the Evolution of Jazz from Traditional Forms
James McDougall	Vladimir Lenin: Hero or Tyrant
Harry Davis ('11)	Leni Riefenstahl: Feminist or Nazi?

Tuesday, May 3

BIOCHEMISTRY — *Olin Atrium*

Metabolic Disorder Poster Session — ***Session Chair: Paul Greenwood***

1:00 - 3:00 PM

Daniel P. Goldstein ('11), Peter S. Kirk ('11) and Sean F. Sullivan ('11), Biochemistry
Biotinidase Deficiency

Ian A. Bettencourt ('12) and J. Alexander Storer ('12), Biochemistry
Leigh's Disease

David M. Brazel ('12) and Frances Lee ('12), Biochemistry
Lesch-Nyhan Syndrome

Tucker J. Cushing ('11) and Daniel H. Echt ('11), Biochemistry
Phenylketonuria

Stefan P. Davatz ('13) and Michael J. Verschoor-Kirss ('12), Biochemistry
Polysaccharide Storage Myopathy

RELIGIOUS STUDIES — *Lovejoy 344*

Death and Spirituality Presentations — ***Session Chair: Debra Campbell***

9:30 - 10:45 AM

Francesca Cone ('13)	The Spirituality of Death Row
Sally Klose ('12)	Spirituality and the Mothers of the Plaza de Mayo
Kristin Raymond ('11)	The Spirituality of Suffering: Human Dignity and the Right to Die

Wednesday, May 4

BIOLOGY — *Olin 335*

Molecular Biology Presentations — ***Session Chair: Russell Johnson***

1:15 - 2:30 PM

Emily Bradford ('11) and Sarah Martinez ('11), Biology
CAB1 Expression in *Arabidopsis thaliana* Exposed to Varying Levels of Light

Jennifer Gemmell ('12) and Andrew Thomas ('11), Biology
HSP7 Expression in *Arabidopsis thaliana* Plants Under Environmental Stress

Abigael Cherulyot ('12) and Nora McCall ('11), Biology
Developmental Stage and Water Availability Influence *RD29B* Expression in *Arabidopsis thaliana*

Christine Reynolds ('12) and Daniel Echt ('11), Biology
The Effects of Age on *SAG12* Gene Expression

Mara Bensson ('11) and Emiliano Hergenreder ('11), Biology
The Effects of Red and Blue Light on *RBCS-3B* Gene Expression

ENVIRONMENTAL STUDIES — *Ostrove Auditorium, Diamond*
Environment and Society Presentations — *Session Chair: Philip Nyhus*
10:00 - 10:50 AM

Taryn M. Akiyama ('14), Anna R. Hess ('14), Catherine J. Mysliwiec ('14) and Allison J. Rigby ('14), Environmental Studies
Exploring Influences of Ecological Footprints Among Countries

Sarah E. Large ('14), Kallie E. Leschen-Lindell ('13), Michael K. Steele ('14) and Taylor M. Witkin ('14), Environmental Studies
Why Are Some Ecosystems More Prone to Invasive Species Than Others?

Marie Abrahams ('14), Mackenzie Nichols ('14), Theresa Petzoldt ('14) and Josephine Thiele ('12), Environmental Studies
Why Do Car Manufacturers Adopt Environmentally Friendly Production Practices?

SOCIOLOGY — *Diamond 221*
Non Profits and Philanthropy Presentations — *Session Chair: Tom Morrione*
1:00 - 3:00 PM

Caitlin Hewett ('12), Cameron Cox ('11) and Sara Ramsay ('11), Sociology
Grant: Enhancing Classroom Accessibility (Children's Center of Augusta)

Scott Hill ('11), Theo Papademetriou ('11) and Geri Morris ('11), Sociology
Grant: Increasing Membership Through Marketing (Viles Arboretum)

Amanda Ferguson ('12), Diane Leinen ('11), Abigail Myers ('11) and Ellen Ramage ('11), Sociology
Grant: Learning by Reading - Improving Materials and Technologies (Literacy Volunteers)

Hilary Walker ('11), Lisa Kaplan ('13) and Stefanie Solar ('11), Sociology
Grant: Send a Kid to Camp to Camp - It is the Right Thing To Do!! (Maine Children's Home for Little Wanderers)

Kristen Raymond ('11), Heather Arvidson ('11) and Amanda Schmitt ('11), Sociology
Grant: The Sound of Silence: Giving Voice to the Voiceless (Sexual Assault Crisis and Support Center)

MATHEMATICS — *Mudd 405*
Mathematics Honors Presentation — *Session Chair: Jim Scott*
4:00 PM

Irina Cazan ('11), Mathematics
TBA

Thursday, May 5

ENVIRONMENTAL STUDIES — *Ostrove Auditorium, Diamond*
Environment and Society Presentations — *Session Chair: Philip Nyhus*
10:00 - 10:50 AM

Amarinda L. Keys ('14), Jenna A. Mahaffie ('14), Elizabeth W. Anderson ('14) and Morgan E. Monz ('14), Environmental Studies
Shaping National Attitudes Towards the Environment: An Eight Country Case Study

Daniel J. Chiniara ('13), Scott H. Carpenter ('14), Lauren M. Kerr ('13) and Clara G. Bicher ('14), Environmental Studies
Under What Conditions is Solar Technology More Widely Available in the United States?

Max A. Pollinger ('14), Rebecca K. Forgrave ('14) and Benjamin R. Grimmig ('12), Environmental Studies
Why Do Some Cities Have More Sustainable Transportation Systems Than Others?

Colin J. Cummings ('14), Catherine G. Gallagher ('12), Guillermo Sapaj ('14) and Natasha K. Ziv ('14),

Environmental Studies
Why do Some Countries Use More Nuclear Power Than Others?

BIOCHEMISTRY ***Olin Atrium***
Metabolic Disorder Poster Session ***Session Chair: Paul Greenwood***
1:00 - 3:00 PM

Lindsay E. Dale ('12) and Roxanne Ghazvinian ('11), Biochemistry
Pompe Disease
Vanesa L. Silvestri ('12) and Josephine C. Thiele ('12), Biochemistry
Porphyria
Christopher Ng ('11) and Lisa Y. Park ('11), Biochemistry
Smith-Lemli-Opitz Syndrome
Catherine G. Gallagher ('12) and Emily Grace Kaye ('12), Biochemistry
Von Gierke's Disease

RELIGIOUS STUDIES ***Lovejoy 205***
Religious Studies Presentations ***Session Chair: Nikky Singh***
4:00 - 6:00 PM

Robyn Wardell ('11)	The Language of Food in Hindu Text and Ritual (with Professor Nikky Singh)
Amanda Forrester ('11)	How the Ku Klux Klan Evolved into a Religious Denomination (with Professor Debra Campbell)
Lizzie Poteet ('11)	Fallen In Love: Angel Mythology in Romance Novels (with Professor Julie Faith Parker)
Mischa Noll ('11)	The Philosophy of the Heart Sutra and the Buddhist Peace movement of the Vietnam War (with Professor Nikky Singh)
Devin Burkhart ('11)	Comparative Religion Through an American Transcendentalist Lens (with Professor Nikky Singh)
Jules Kowalski ('11)	The Paradox of the Great Goddess and the Lowly Lady in South Asia (with Nikky Singh)

RELIGIOUS STUDIES ***Lovejoy 344***
Death and Spirituality Presentations ***Session Chair: Debra Campbell***
9:30 - 10:45 AM

Allie Stitham ('12)	Laugh in the Face of Death
Nikki Busmanis ('11)	The Illusion of Immortality: How 21st-Century Technology Promotes the Delusion
Samuel Clifford ('12)	Tragedy, Grieving, and Spirituality: The Remembrance of Heartbreaking Deaths

Friday, May 6

ENVIRONMENTAL STUDIES — *Ostrove Auditorium, Diamond*
Environment and Society Presentations — *Session Chair: Philip Nyhus*
10:00 - 10:50 AM

Ellen A. Evangelides ('14), Marianne H. Ferguson ('14), Dylan W. Riessen ('13) and William G. Benjamin ('14), Environmental Studies
The Effects of Financial Incentives and Political Environmental Programs on State Renewable Energy Production Levels

Sarah Fensore ('13) and Sara Lezin ('14), Environmental Studies
What Are the Determinants of Successful and Sustainable Campus Initiatives in New England?

Allison J. Fowle ('13), Dominique V. Kone ('13), Lydia J. Ball ('13) and Renzo F. Moyano ('14), Environmental Studies
What Determines Whether or Not Countries Receive Conservation Aide?

Siya Hedge, Allison Shepherd ('12) and Eva Zenilman ('14), Environmental Studies
Why Do Some Countries Have Higher Rates of Infant Mortality Than Other Countries?

CHEMISTRY — *Arey 5*
Senior Presentations — *Session Chair: Jeff Katz*
11:00 AM

Lisa Park ('11)	TBA
Marc Poore ('11)	TBA
Brittany Tschaen ('11)	One-Pot Synthesis of Inherently Chiral Azacalixarenes by Nucleophilic Aromatic Substitution Reactions

Colby Undergraduate Research Symposium 2011
April 27 - April 29, Colby College, Waterville, Maine

Abstracts - Research Symposium

GENDER, ATHLETICS, AND THE MEDIA

Karlyn Adler ('11), Women, Gender, Sexuality

In this project, I explored the relationship between gender, athletics, and the media. I came to this topic due to my frustration over the lack of student support and attendance of female athletics events on campus, despite the fact that there are very successful teams. I looked at the great benefits of participation in sport for females, while recognizing that these benefits are not omnipresent. While many female athletes garner many benefits from participation which allow them to feel positively about their bodies and themselves, the lack of coverage, and the type of coverage, in the media serves to counteract these benefits. In this presentation, I hope to show this connection, and argue for widespread change in athletic focused media in order to help female athletes keep the benefits they gain from athletic participation.

WHY SHOULD IT MATTER TO ME?: TEACHING AFFLUENT STUDENTS ABOUT SOCIAL JUSTICE

Karlyn Adler ('11), Independent Studies

To date, there has been little attention given to effectively teaching social justice and privilege; instead, the research has been focused on the social (in)justice and privilege itself. In other words, the existing research focuses on the injustice that currently exists. In this study, I seek to provide methods to enable affluent schools to teach social justice and privilege to their students in order to provide a model that other schools can follow. To explore this question, I interviewed thirteen different adults in the educational community: a state board of education member, a president of a foundation, four school administrators, five teachers and two parents, all of whom teach or live in an affluent community, in both private and public schools. Through these interviews and the analysis of school documents, school climate, the learning goals that were identified, and the perceived obstacles to teaching for social justice were all important themes that emerged. From these themes, it became clear that it is essential for social justice learning to not just be emphasized, but for it to be institutionalized in order for the students to truly understand these lessons. This institutionalization is the product of the school climate, the curriculum, and the training practices of teachers. Schools simply need to stop talking about teaching for social justice, stop making excuses, and do the work to make it effective.

A PIECE OF THE PIE: DO THE RIGHT THING AND TERRITORIAL BEHAVIOR

Mavrick Afonso ('11), American Studies

Do The Right Thing demonstrates that a community composed predominantly of one race maybe inclined to be resistant and territorial against other racial groups who occupy their community. The film specifically focuses on the black community within the Bedford-Stuyvesant section of Brooklyn, which is a predominately black community. Outsiders, those who are viewed as intruders, invade this community in two ways: they themselves personally intrude the community of people or they create establishments, such as business, within that community. The dominant racial group resist by alienating the outsiders or by not supporting their establishment. However the outsiders within Do The Right Thing prove to have greater autonomy because the black community depends on the establishment's goods. But this what leads the black community to take up drastic measures against the outsiders.

COMPUTERIZED BALANCE TESTING IN THE ASSESSMENT AND DIAGNOSIS OF MILD TRAUMATIC BRAIN INJURY

Peter Allfather ('11) and Tory Gray ('11), Psychology

Concussions, known technically as mild traumatic brain injuries, are one of the most common injuries that occur in high school sports. Past research has shown that concussive effects are usually temporary, but include symptoms such as persistent headaches, nausea and/or vomiting, impaired judgment, alterations in neurocognitive functioning, and balance deficits. This study evaluates the efficacy of balance testing in the assessment and management of concussions in student-athletes, specifically, as a sideline assessment tool that could support the diagnosis of a concussion. Balance in human participants is assessed via a proprietary belt-mounted telemetry suite incorporating a three-axis accelerometer and gyro-meter. The study will conclude that human balance can be accurately quantified by

the use of this device on participants who assume a diagnostic pose in four separate trials with variable surface conditions and visual input. Future study focuses on the analysis and filtering of normative and post-concussion data to refine the system for convenient clinical application.

SEEDS OF THE PAST AND BLOSSOMS OF CHANGE: THE POLITICAL SIDE OF MUSHA-E PRINTS

Petya Andreeva ('13), East-Asian Studies

The Tokugawa rule (1616-1868) marked significant social and political changes in the structure of Japanese society. The Edo period was ruled by a succession of shoguns, who focused their efforts on the stabilization, consolidation and stratification of the nation. Overall, this was a time of international isolation and also a phase of stagnation in terms of international cultural transfer and freedom of expression. Therefore, the emergence of the musha-e warrior prints that depicted heroes from past ages was an implicit political statement of defiance against and social escapism from the frozen dynamics of the Edo period. Moreover, because of the international alienation of the nation, musha-e prints' subject matter denoted that Japanese mass material culture vastly embraced intrinsically Japanese subject matter.On one hand, these prints were an incredibly sophisticated and smartly designed expression of political disobedience. Except for giving a voice that could lead to their prosecution, musha-e gave the merchant class the whisper of change. Last but not least, musha-e also traced back the seeds of "Japaneseness" in Japanese art trough the blossoms of history and thus established an independent authentic style that carried the voice of the past.

ANHEDONIA AND CHOLINE AVAILABILITY IN A RAT MODEL OF SCHIZOPHRENIA

Natasha Atkinson ('11), Psychology

The differences in choline supplementation in an animal model of schizophrenia, where rats were administered either vehicle or MK-801 (dizocilpine) injections, was investigated. This study served to replicate the findings of Gray, Gardener, & Glenn (2010), who found robust affects for choline supplementation attenuating the schizophrenic symptom, anhedonia â€" loss of pleasure. Periadolescent rats were put on a regular choline (1.1g/kg) or supplemental choline (5 g/kg) diet. They were given i.p. injections of either 0.9% saline or MK-801 for 12 days. Saccharin preference tests were conducted before drug treatment, immediately after, and 2 weeks post drug treatment. An open field test was also conducted post drug treatment. There were no differences between diet conditions or drug treatment groups for both saccharin preference and open field tests. Lack of attenuating affects of choline in MK-801 drug treatment groups contrasts Gray et al.â€™s (2010) previous study, suggesting that the effects of MK-801 are variable on inducing anhedonia. A trend was seen of choline supplementation rescuing the effects of MK-801, although not significant. Further histology examining the brain and Dopamine D2 receptors will indicate the mechanisms behind the results.

FITTING THE COLBY PERSONALITY: PREDICTING SUBJECTIVE WELL-BEING THROUGH UNDERGRADUATE PERSONALITY COMPARISONS

Natasha Atkinson ('11), Jessica Blais ('12) and Julia Engelsted ('11), Psychology

The present study examined whether the fit between the personality of individual students and their perceived personalities of the â€œtypicalâ€ student at their institution can predict their well-being. Participants self-rated their own personality, their perceptions of a â€œtypicalâ€ college student personality, and their perception of a â€œtypicalâ€ Colby student personality through three separate 10-item measures of the Big Five Inventory. To investigate their subjective well-being, participants completed a modified Satisfaction With Life Scale and an abbreviated Positive and Negative Affect Scale, both specifically targeting life at Colby College. Results showed that when studentsâ€™ personalities matched better with their perceived â€œtypicalâ€ Colby personalities, they self-reported a higher positive affect and felt as if they fit in better to the Colby environment. Additionally, it was found that students higher in Conscientiousness and lower in Neuroticism rated higher on the well-being measures. These results suggest that individuals who have similar personalities to the people in their environment will experience greater happiness.

THE CARCINOGENIC EFFECTS AND HUMAN HEALTH COSTS OF ARSENIC EXPOSURE

Shreya Balakrishna ('12) and Andrew Thomas ('11), Environmental Studies

The chemical element Arsenic (As) is found in mineral deposits worldwide. Arsenic can take a variety of chemical forms that dictate how it is absorbed and processed by the body, where it can cause both acute and chronic health effects. Arsenic poising presents a widespread threat to public health worldwide, including within the US. In addition to causing damage to the nervous and circulatory systems, there is considerable evidence that arsenic acts as a potent carcinogen. We review here the mechanisms by which Arsenic can act as a carcinogenic agent, as well as the resulting toll on human health.

AN ASSESSMENT OF BIOMASS ENERGY AT COLBY COLLEGE

Rachel Baron ('11), Environmental Studies

Biomass energy has emerged in the last decade as a renewable alternative to fossil fuels for thermal energy generation. Biomass is also

a considerable part of Maine's energy portfolio, comprising 35%, and will continue to provide a crucial source of renewable thermal energy for the state in the future. Colby College is in the process of converting to biomass energy to replace fuel oil for the production of steam on campus. It is therefore important to have a comprehensive understanding of the impacts of biomass energy, and an assessment of the advantages and disadvantages. This thesis adds to the body of research in the field, and can provide guiding information for Colby as it proceeds with the biomass expansion. In this thesis, I introduce the topic of biomass energy, including definitions and related policy, explore the debates within the scientific community regarding the carbon neutrality of biomass, analyze the differences between forest certification mechanisms, explain the case of Colby College and its biomass facility, discuss Colby's current plan and possible options, and then analyze the direction of Colby's biomass facility into the future, including a matrix analysis of the different sourcing options and conclusions on the best options. I find that incorporating not only forest certification but also biomass retention guidelines would help to ensure sustainability and minimize the carbon emissions of the biomass facility.

DEPTH PROFILE ANALYSIS OF LITHIUM CONCENTRATIONS IN MID-ATLANTIC CRUSTAL FELDSPARS

Nikolajs Batarags ('11), Geology

Mid-ocean ridges represent divergent tectonic plate boundaries where new oceanic crust is formed. In this extensional environment, faults and fractures form within the crust, serving as pathways for cold seawater to circulate within the cooling crust. Lithium (Li) is a good indicator of water-rock interaction because it is soluble in water-rich fluids. Depending on factors such as fluid composition, volume, and temperature, Li may be incorporated in, or leached from the crust. This exchange imparts a distinct chemical signature in the upper (~0-2 km) crust that has been used to track oceanic crust that has been recycled into the mantle. However, the lower and volumetrically greater proportion of crust (~2-8 km) is poorly characterized. The goal of this study is to analyze Li concentrations in feldspar separates along a depth profile. This lithium analysis is part of a larger study aimed at characterizing Li concentrations in the lower crust. Samples used for this study are lower-crust gabbros from IODP Expedition 305 Hole U1309D, exhumed at the Atlantis Massif, 30°N along the mid-Atlantic spreading center. Whole-rock Li concentrations were determined previously, but it is not known in which minerals, specifically, Li is concentrated. To obtain mineral separates, the samples are crushed, sieved and then separated using a Frantz Isodynamic Magnetic Separator. The separates must then be prepared for ICP-AES analysis using standard acid-digestions procedures.

SPATIAL ANALYSIS OF NY LATVIAN LUTHERAN CHURCH PARISHIONER DEMOGRAPHICS

Nikolajs Batarags ('11), Religious Studies

The New York Ev. Lutheran Church has been based in the New York area for more than 100 years, providing religious, cultural and educational services to the Latvian Lutheran community. The church, which has approximately 1,000 members, is geographically broadly distributed across the Five Boroughs of NYC and surrounding areas including Westchester County, Long Island, and New Jersey. Almost all parishioners speak Latvian fluently; all Church services are held in Latvian, and three Sunday Schools provide children in grades K-8 instruction in Latvian language, culture and history as well as religion. The objective of this study is to analyze the distribution of parishioners in the New York Area, focusing on intergenerational distribution trends. By studying a histogram of parishioners' ages, three distinct generations were identified, the oldest of which corresponds to the Post-World War II Latvian immigration wave. Results indicate, as may be predicted by general assimilation trends, a decreasing population and increasing distribution of parishioners.

STATE OF MAINE'S ENVIRONMENT: HEALTH EFFECTS OF WOODSMOKE IN MAINE

Courtney Beaulieu ('11), Environmental Studies

In recent years, the rising cost of fuel has prompted many Maine residents to start or continue using wood-burning stoves or outdoor wood boilers to heat their homes. In January 2011, the Maine Department of Environmental Protection conducted interviews across the state and concluded that approximately 42% of Maine residents use wood burning as a primary or secondary source of heating. However, recent studies have shown that wood-burning stoves and outdoor wood boilers emit significant amounts of pollutants that are harmful to human health. Carbon monoxide, particulate matter, polycyclic aromatic hydrocarbons, and aldehydes are a few examples. This study will examine the use of wood-burning devices across different counties in Maine and provide a description of the most harmful pollutants in woodsmoke and their effects on human health. Further, suggestions for improvements will be presented.

ATLAS OF MAINE: ROAD NETWORKS IN DOWNEAST MAINE

Garrison Beck ('13), Environmental Studies

This map highlights and classifies the road networks in Downeast Maine using ArcGIS 9.3 software.

MOUNTAINTOP REMOVAL COAL MINING: STRIPPING APPALACHIAN OF ITS PEOPLE, RESOURCES, AND LANDSCAPE

Emma Beck ('12), History

Picture a pristine hillside. Undulating emerald topography housing families whose roots are almost as deep as the forests. The forests are home to approximately 250 bird species, 150 tree species and countless animals, plant species; all unique shapes and sizes, buzzing, chirping, and sniffing away. Old streams anastamose through the low flat regions until they are met by younger tributaries that rejuvenate their flow. The streams cut into the bushy green mountain valleys and flow through small Appalachian towns. Highway 79 meanders through the scene, and you feel as though humans passed through with their pavement and steamrollers only to realize that this area is far to beautiful to tarnish with the consuming machines of today's society. It didn't quite happen that way. Now, picture the top of these mountains being blasted off, shaking the land and its people to the core. That's reality. That is mountaintop removal coal mining and the process supplies a major energy source to the United States. For more information on the beauty of mountaintop removal mining see the article, "Surface Mining: Viewpoint" released by Wayne Supply Company in conjunction with the Kentucky Coal Association. In contrast, to those who live and work in coal mining regions of Kentucky and West Virginia mountain top removal is a violent, environmentally devastating process that destroys lifestyles, homes and a very way of life. Mountaintop removal mining is a form of strip mining that requires fewer miners than traditional underground mining but requires as much dynamite as the Oklahoma City bombing. The resulting material chokes the headwater of streams and pollutes the ground water of locals. Residents in the area are subjected to serious health effects and the government and coal companies are not stopping it.

PREFERRED ORIENTATIONS OF PYROXENE IN THE ZAGAMI SHERGOTTITE: IMPLICATIONS FOR MAGMATIC EMPLACEMENT

Timothy Becker ('11), Geology

The martian meteorite Zagami is a basaltic shergottite with a complex yet unresolved crystallization history. It is comprised of three distinct, increasingly evolved lithologies. Two lithologies, the normal Zagami lithology and the dark, mottled lithology, account for the majority (~98 vol.%) of the meteorite and are rich in pyroxene (pigeonite and augite) and maskelynitized plagioclase. Studied herein is Zagami thin section USNM-1, which samples both the fine-grained portion of normal Zagami and the dark, mottled lithology. The morphology of the pyroxene crystals has been used to infer crystal settling as a mechanism to explain the presence of abundant pyroxene. However, this inference has never been corroborated due to the inability to examine the pyroxenes in three dimensions. The relatively new electron backscatter diffraction (EBSD) technique resolves this ambiguity and provides an objective analysis of the pyroxenes' crystallographic axes. Quantitative orientation maps and c-axis pole figures indicate that a planar fabric indeed exists in both lithologies. Furthermore, the foliations are subparallel to their contact. However, a corresponding lineation does not exist in either lithology. The presence of a foliation without an association lineation (i.e., limited directional flow) implies a relatively quiescent emplacement of Zagami's parent magma, most probably as a shallow intrusive. The mechanism responsible for the cumulate texture is likely some combination of flow segregation, filter pressing, and gravitational settling. We suggest EBSD evaluation of other shergottites, especially EETA 79001, which displays a similar planar contact between Lithologies A and B.

ANALYSIS OF ENVIRONMENTAL HEALTH STRATEGY CENTER MEMBERSHIP

Kaitlyn Bernard ('13) and Jillian Blouin ('13), Environmental Studies

Membership analysis for the Maine based Environmental Health Strategy Center was performed to asses in which legislative districts their membership was strongest. Additional factors were considered such as levels of individual member activity, proximity to local newspapers and political swing districts based on members of the Natural Resources Committee.

ATLAS OF MAINE: ELEVATION OF DOWNEAST MAINE

Kaitlyn Bernard ('13), Environmental Studies

This map shows the physical elevation of Downeast Maine, with contour lines representing 50m increments of elevation. Created by Kaitlyn Bernard ('13). Data Sources: County boundaries and elevation from the Maine Office of GIS. Lakes and rivers of Downeast Maine taken from ESRI data. Projected in NAD83, UTM Zone 19N.

THE EFFECTS OF CHEMICAL OBESOGENS ON CARDIAC FUNCTION

Kaitlyn Bernard ('13) and Jillian Blouin ('13), Environmental Studies

A traditional understanding of obesity is rooted in the belief that the cause is an energy imbalance between caloric intake and physical activity. Today an emerging body of evidence shows that chemical exposure to certain endocrine disrupting chemicals found readily in the environment is linked to the onset of obesity later in life. Additionally, the impacts of obesity on cardiac function are significant and deleterious. We explore the links between exposure to chemical obesogens and cardiac dysfunction.

FLASH CLUB: A DANCER'S DOCUMENTARY

Emily Blerwirth ('11), Anthropology

This documentary investigates and analyzes the origins of Flash Mobs, chronicles the process of bringing one to life at Colby College,

and explores how they might evolve as well as what they might be used for in the future. A Flash Mob dance is a seemingly spontaneous dance that occurs in a public space. It begins with one person who erupts into dance, but as the song continues, more and more people from the crowd join until there is a giant mob moving together in a well-choreographed dance. Though others shy away from their love of dancing when in public, I embrace the public spectacle. If a song provokes me to move, I will dance. I have dreamed about transforming my everyday routines, like walking between classes and eating in the dining halls, into scenes from musicals. So, when I first saw a video of a Flash Mob dance, I knew I had to be in one. As I began to make plans and gather support, it became obvious to me that while people generally expressed a lot of interest in seeing one here at Colby, they were hesitant to say they would participate, and lacked interest on working to organize the dance itself. Regardless of their hesitation to take on a role as "participant," their eagerness to be a "viewer" proved one thing for certain: a Flash Mob dance would be very well received. This film brings to light the elements that make Flash Mobs a worldwide phenomenon, but also exposes the difficult process necessary to bring one (and all dancers) together.

LEARNING DISABILITIES AT COLBY: A PRELIMINARY EXAMINATION

Hannah Bisgyer ('11), Education and Human Development

The purpose of this study is to examine the current social and academic environment that exists at Colby College for students with learning disabilities. In order to collect this information 11 interviews were conducted across class year and gender. This paper examines three common areas of interest across the interviews, namely: the social stigma, the policies and procedures, and the professors. Finally, this paper reviews recommendations in order to improve the atmosphere for students with learning disabilities at Colby.

WHAT HAPPENS WHEN A MONSTER BAKES COOKIES?: MEMORY OF ACTORS AND EVENTS AS A FUNCTION OF EMOTIONAL VALENCE

Hannah Bisgyer ('11), Stephanie-Ann LaRose ('12) and Alyssa Lepore ('11), Psychology

This study examined the extent to which emotional valence of actors and actions influenced children's understanding of real and fantastical images and the subsequent effect on memory recall for these images. In order to determine this we manipulated two variables, image type (real, fantastical) and emotional valence (positive/ positive, positive/ negative, negative/ positive, negative/ negative). The results indicated that children (age 3 to 5) were better able to report that positive fantasy images could not happen in real life, where as they were not as accurate at reporting that negative fantasy images could not happen. In making this distinction children use the action of the image to judge the emotional valence of the overall image. No significant results were found for the recall portion of the experiment. Results suggest that emotion plays a role in children's ability to make a distinction between reality and fantasy images. Further research into the memory portion of this experiment is needed in order to understand the implications for eyewitness testimony.

ZOOPLANKTON OF THE BELGRADE LAKES

Kimberly Bittler ('11), Environmental Studies

Zooplankton are an important intermediate in freshwater food chains linking fish and algae, making zooplankton biotic indicators that are capable of responding to both bottom-up and top-down effects. Bottom-up effects include processes such as nutrient loading, while top-down effects are linked to changes in upper levels of the food chain, such as the introduction of aggressive predators like Northern Pike. Zooplankton samples were collected from macrophyte patches, offshore sites, and littoral sites with both undeveloped and developed shorelines. No relationship was found between samples and adjacent shoreline development, although many families responded to watershed-wide levels of residential development. Macrophyte patches supported higher densities of several families of zooplankton. The response of densities varied across families, indicating that some families may be useful indicators. With further research, the role of zooplankton in maintaining water quality and how zooplankton are impacted by processes such as development may be quantified.

HUMAN PREDATOR CONFLICT IN DEVELOPED COUNTRIES

William Bloomhardt ('12) and Meghan Cornwall ('11), Environmental Studies

There are a variety of forms of human-carnivore conflict, including livestock predation, human injury and death, property damage, disease transmission, and damage to agriculture. Different approaches to conflict management can be regarded in four main categories: modifying human behavior, modifying animal behavior, modifying livestock behavior and preventing spatial interaction. This project creates a criteria in order to assess how effective conflict mitigation is in two case studies. The two case studies are grizzly bears in the United States and dingoes in Australia. The study concludes that both of these conflict resolutions are effective because they meet the majority of the criteria, and have safetly mitigated further conflict.

ATLAS OF MAINE: POTENTIAL SEA LEVEL RISE IN DOWNEAST MAINE

Jillian Blouin ('13), Environmental Studies

According to the IPCC 2001 Climate Change Working Group, sea-level rise equivalent to all the ice on earth melting would be 69.31 meters. A large change in global temperatures would have dramatic impact on areas including Downeast Maine. This map shows the regions of Downeast Maine that would be flooded if sea levels rose 15, 25, or 35 meters. A 35 meter sea level rise would occur if 50% of polar ice melted. Data from Maine Office of GIS and ESRI 93 and projected in NAD83 , UTM Zone 19 N 'IPCC Third Assessment Report: Climate Change 2001.' UNEP. GRID-Arendal, 2003. Web. 9 Mar 2011. .

"CHEKHOV'S SECULAR SAINT"

Allison Bolger ('13), German/Russian

Anton Chekhov was not a religious believer. A writer and doctor, he wrote that when he performed an autopsy he was never able to locate the "soul." However, he knew the Russian Orthodox church very well. In his story "The Fidget" Chekhov portrays a man who matches closely the qualities of a Christian saint. How and why does the tradition of self-sacrifice in saints' lives manifest itself in this very secular story?

CREDIBLE COMMITMENTS OR MANIPULATED PROMISES: THE INTERNATIONAL CRIMINAL COURT IN UGANDA

Megan Booth ('11), Government

In "Credible Commitments and the International Criminal Court," Beth Simmons and Allison Danner assess the nature of states that ratify the International Criminal Court (ICC) to answer this fundamental question in international relations: why do states, particularly those with internal political violence, choose to surrender national sovereignty to institutions over which they have little control? They claim that states use the court as a third party mechanism to legally bind them to otherwise easily evadable commitments to eschew extreme violence. If Simmons and Danner are correct, illiberal regimes party to the Rome Statue should, over time, show both a decrease in the degrees and severity of violence used against their adversaries and increased accountability for security personnel who overstep the boundaries of acceptable use of force as specified by international humanitarian law. This paper questions whether Simmons and Danner's assessment of state motivation and outcomes they associate with the signing the Rome Statute fits the case of Uganda. Using process tracing, it investigates whether the Simmons and Danner's observed processes among variables indeed match those predicted. After providing relevant background information on the ICC and outlining Simmons and Danner's argument in greater detail, this paper will use Uganda, the first situation taken by the ICC, as a case study. It will examine the human rights record of Ugandan security forces after the country ratified the Rome Statute in 2002 to determine whether being party to the statute has resulted in "hand tying" and increased peace in that country. Then it poses an alternative hypothesis: states ratify the Rome Statue because they believe they can use the ICC to promote their own interests.

EFFECTS OF POST-EVENT QUESTIONING AND CUING ON EYEWITNESS MEMORY

Andrew Bragg ('11), Megan Compaine ('12) and Annalyse Tamashiro ('12), Psychology

In this study, we examined the effects of immediate post-event questioning and partial cuing on participants' recall in the context of eyewitness memory. We predicted that participants who were given a free recall test immediately after the witnessed event would have better recall and less susceptibility to part-set cuing effects during a later test. In addition, we hypothesized that participants who were given partial cues on the final test would recall less new information than uncued participants. 75 participants (male and female, 18-23 y.o.) watched a video of a robbery, then responded to a five-minute written interview (structured, free recall, or a filler task for controls). All participants then completed 15 minutes of distractor tasks and completed a final written interview. Half were allowed to look back at their initial responses as a partial cue, while the rest were not. We found that, contrary to our hypothesis, participants in the structured interview condition recalled more information overall than controls and participants in the free recall condition. Also, we found no effect of cuing on later recall. Although they are contrary to our predictions, these findings are consistent with some prior research, and we will discuss alternate theoretical explanations.

ENVIRONMENTAL WRITING

Blair Braverman ('11), Environmental Studies

I will be giving a reading from my honors thesis, which is a collection of environmental creative nonfiction. Common themes in my writing include explorations of the significance of place and the relationship of humans to the natural world. This reading will include the essay 'Useless Bay,' which won first place in the Williams-Mystic/Joseph Conrad essay contest, and 'Rangefinder Girl,' which won first place in the Atlantic Monthly student writing contest. These essays take place, respectively, in the Puget Sound and Namibia's Ugab desert.

THE MAINTENANCE AND CYCLING OF PLASMID-MEDIATED DRUG RESISTANCE IN A SIMULATED AQUACULTURE ENVIRONMENT

David Brazel ('12) and Daniel Echt ('11), Biology

Horizontal gene transfer (HGT) is one of the major factors involved in the spread of multi-drug resistance in medical, agricultural, and aquacultural contexts. The Inc A/C class of plasmids consists of promiscuous mobile genetic elements that have been found in many pathogenic and commensal bacteria, including Yersinia pestis, Salmonella enterica, and Aeromonas salmonicida, a virulent fish pathogen responsible for significant economic damage in many aquaculture facilities. Commensals are resident non-pathogenic bacteria that may serve as reservoirs of antibiotic resistance by maintaining and transferring plasmid-mediated resistance to pathogenic bacteria. We sought to examine this process by cycling an Inc A/C plasmid between Aeromonas salmonicida and Citrobacter sp., a fish commensal. We successfully transferred both the Inc A/C plasmid and the associated resistance phenotype from AS03, a highly resistant strain of A. salmonicida, to K3, a non-resistant A. salmonicida isolate, via a Citrobacter sp. intermediate. We also demonstrated long-term plasmid stability in both recipients, enhancing the potential environmental and economic consequences of this exchange.

THE OLD IN THE NEW: ICONOGRAPHY, LUBOK AND GONCHAROVA'S MODERNIST ART

Allison Brown ('12), German/Russian

The Russian avant-garde cultural movement (early 20th-century) meant to "throw [the past] overboard from the ship of modernity." Yet modernist artists looked to "primitive" art forms for inspiration. Motifs and techniques from icon painting and folk woodblocks (lubok) appear in the paintings of Natalia Goncharova. This presentation analyzes Goncharova's borrowing of old genres to create her unique modernist aesthetic.

TRANSITIONAL STRESSORS: REACTIVITY TO SOCIAL AND FUTURE-CAREER STRESSORS IN FRESHMEN AND SENIOR COLLEGE STUDENTS

Julia Bruss ('11), Psychology

The present study examined potential age-based patterns of anxiety related to two significant transitions during emerging adulthood: leaving high school for college and leaving college for the workplace. Young adults were randomly assigned to view video clips eliciting social anxiety, career-oriented anxiety, or control (no change in emotion). While the emotional effects of transition-related anxiety did not differ based on college-year, significant gender differences in emotional response were found. These results support previous evidence of gender differences in negative emotion and reported loneliness, and may reflect young adult males' disinclination to admit to feelings of isolation or other negative emotions.

ON WITH THE STORY 1: READINGS IN FICTION, SCREENPLAY AND MEMOIR

Darcy Bullock ('11), English

Readings from the members of EN 478, 'Advanced Studies in Prose.' Students will read from novels, short stories, 'flash fiction,' screenplays, and memoirs in progress.

THE GREAT GARBAGE GYRES. OCEAN POLLUTION THROUGH THE 20TH CENTURY.

Robert Canning ('12), History

Where does the trash generated through everyday life end up after its disposal? One answer is a landfill, another is an incinerator, and some might even be so bold as to suggest a recycling plant. Unfortunately, a significant amount of trash, especially what is made from plastics, has ended up in the Great Pacific Garbage Patch or one of its lesser-known brethren in the Atlantic and Indian Oceans. Also known as the Pacific trash gyre, or one of the trash vortexes, this liquid litter is in constant motion between Hawaii and California due to the prevailing water currents. These patches of floating garbage are constantly degrading the marine ecosystem and endangering all life on Earth. They have been growing since the early 1900s because of population and economic growth; specifically the plastic takeover in packaging and consumer goods. Global regulations have been ineffective in stemming the growth of ocean pollution because of the persistent nature of plastics. Harmful chemicals accumulate in these plastics and are eventually released either through consumption or leaching, back into the natural world. It is imperative to the continued health of the world that they are acknowledged, researched, and cleaned up.

NUTRIENT PREFERENCES IN *BATRACHOCHYTRIUM DENDROBATIDIS*, A PATHOGENIC CHYTRID FUNGUS

Amy Cantor ('11), Biology

Batrachochytrium dendrobatidis (Bd) is a pathogenic fungus that causes chytridiomycosis, a disease deadly to frogs and a leading source of global amphibian population declines. There is a growing body of knowledge about this emerging infectious disease, but details on physiological characters are still needed to broaden our understanding of how to protect vulnerable frog species. Bd strains have been systematically isolated and are identified according to amphibian host species and geographic location. In this investigation, I explored the nutrient preferences for two Bd isolates, JEL258, isolated from a woodfrog in Maine, and JEL423, isolated from a treefrog

in Panama. Laboratory studies on Bd rely on long-term cultures that are grown in tryptone broth, but there is little information on whether this is an optimal method. I therefore tested the hypothesis that Bd exhibits different growth patterns based on nutrient source. Nutrient preferences may play a role in the pathology of Bd, and I tested if different carbon and nitrogen sources, at different concentrations, result in optimal growth. I set up growth assays in 96-well plates using different concentrations of nutrient sources, I measured optical density to measure growth rates. In sum, results so far suggest that there are nutritional differences between JEL258 and JEL423. Results of testing in a number of nitrogen and carbon sources indicates that there were differences in the growth of both JEL258 and JEL423. These results are important to provide further information about the interactions between Bd and amphibian hosts and to strengthen amphibian conservation efforts through greater understanding about optimal nutrition for growth of Bd.

TO EAT OR NOT TO EAT: WHETHER 'TIS EASIER IN THE MIND TO CATEGORIZE SURVIVAL INFORMATION

Anna Caron ('13) and Josef Broder ('13), Psychology

The current study is interested in how people categorize survival information as opposed to other information.

TEEN MOTHERHOOD ON MTV: GLAMOROUS OR GRITTY?

Hali Castleman ('11), Women, Gender, Sexuality

Every day in the U.S. 1,100 teenage girls give birth. This rate vast exceeds that of any other developed country. Despite this, the media continuously glamorizes teen pregnancy. From movies like 'Juno' to TV shows like 'Glee' we are given a false sense of what teen pregnancy and motherhood is really like. For a culture and a generation so obsessed with media there is very little diversity in storyline available. That is, until 2009 when MTV began producing two new reality TV shows, '16 & Pregnant' and 'Teen Mom'. While the United States struggles to combat its teen pregnancy epidemic due to poor reproductive rights and sex education policies for teens, I argue that these two shows highlight the real issues of teen pregnancy. The critique that these shows glamorize teen motherhood is leveled at the wrong perpetrator: the fault lies with the paparazzi and not the shows themselves. Despite the glorification of teen pregnancy in fictional TV shows and movies, and by the paparazzi, MTV's programming itself is more gritty than glamorous. I argue that '16 & Pregnant' and 'Teen Mom' are effective sex education tools because they reach the right audience, in the right medium, and deliver facts that teens are currently not receiving under the U.S.'s failing sexual education system.

THE EFFECTS OF INCENTIVE, MOTIVATION, AND LEVELS-OF-PROCESSING ON RECALL IN PRESCHOOL AGED CHILDREN

Hali Castleman ('11), Psychology

Two experiments analyzed the effects of incentive and motivation on preschoolers' free and cued recall abilities. The children aged three-to-five years (N = 132) watched a short video and completed both free and cued recall tasks. In Experiment 1, half of the 80 participants were given an incentive during recall and half were not. Additionally, half of the participants were placed in an amount motivation condition and half were placed in a truth motivation condition. Results indicated that during free recall, the incentive significantly improved the younger (aged 30-54 months) children's accuracy. There was no significant main effect of motivation. In Experiment 2, 52 younger participants were tested. In this experiment participants were randomly assigned to one of three incentive groups (high, low, none). During free recall, incentive once again significantly improved accuracy for this younger age group. Although, there was no difference between high and low incentive groups, overall, participants offered an incentive were more accurate than those not offered an incentive. These two studies suggest that incentive can be used to increase younger preschoolers' free recall accuracy.

POLLUTANTS IN DRINKING WATER

Allyson Cheever ('11) and Anne Geraghty ('11), Environmental Studies

Researchers have found that human use of pharmaceuticals, pesticides and other compounds results in the accumulation of these chemicals in groundwater. The groundwater can then leach into source water and in some cases the source water is used for uptake at water sewage treatment plants in order to distribute water to the community. Through many studies, scientists have found a number of chemicals to be present not only in the ground and surface water but at various stages in the treatment process and sometimes in the resulting purified water. Different treatment types result in the elimination of certain chemicals but not all treatment plants are using the same techniques, so measurable levels of certain chemicals are present in different areas. The question we are left with is whether chronic exposure to the low levels of chemicals in the drinking water will impact human health.

SEARCHING FOR THE PERFECT MODEL: VELOCITY RESPONSE CURVE ANALYSIS OF CIRCADIAN CLOCK MODELS FOR THE FRUIT FLY *DROSOPHILA MELANOGASTER*

Allyson Cheever ('11) and Sarah Harmon ('12), Computer Science

Mathematical modeling helps us understand and predict the behavior of many biological systems. For instance, mathematical

equations can represent the inner workings of circadian clocks, which regulate daily biological cycles in unicellular and multicellular organisms. Because circadian rhythms are fundamental to many living creatures (including humans), modeling biological clocks has numerous applications extending from agriculture to biomedical science. Beyond simply constructing models, various analyses have been proposed to assess model credibility. A model is considered "robust" if its behavior matches what is known biologically and adjusts its phase appropriately in response to changes in input. Velocity response curve (VRC) analysis is a convenient measure that enables us to study the phase of the model's clock while learning about the structure of the regulatory network itself (Taylor et al., IEEE Trans. Automat. Contr., 153:177-188, 2008; Zellinger et al., Mol. Syst. Biol. 2:58, 2006). We examine four published D. melanogaster clock models (Bagheri et al., J. Biol. Rhythms, 23(6):525-537, 2008; Kuczenski et al., J. Comput. Biol., 3(8):e154, 2007; Ruoff, Christensen, & Sharma, J. Theor. Biol., 237(1):41-57, 2005; Xie & Kulasiri, J. Theor. Biol., 245(2):290-304, 2007) and use VRC analysis for model comparison. We present a summary of our findings and establish that VRC analyses are more useful than classical methods of analysis and, further, may provide insight into biological systems that modeling alone cannot provide.

ATTRIBUTION OF BLAME: ASSESSING THE EFFECTS OF ATTRACTIVENESS AND INTENTION ON MEMORY FOR BLAME

Madeleine Cohen ('13), Lisa Hoopes ('13), Constance Jangro ('13) and Adam Thompson ('13), Psychology

The purpose of our study is to examine the relationship between attractiveness, intentionality, and blame. Specifically, our study is investigating if judgments of an agent's blameworthiness are influenced by attractiveness and intention. We presented participants with a story describing a woman who committed a negative act (running a red light). Our independent variables were the attractiveness (attractive, unattractive) of the woman and her intentions (good, bad, neutral) behind committing the negative act. Our dependent variables were the amount of blame assigned to the woman, the negative judgment of the woman as a person, how good or bad her intentions for committing the negative act were, and whether or not the woman deserved a speeding ticket. We then tested for a ripple effect on memory for all the previously mentioned variables after five days between trials.

CARBAMOYLATING ACTIVITY ASSOCIATED WITH THE ANTITUMOR PRODRUG LAROMUSTINE INHIBITS ANGIOGENESIS IN VITRO BY INDUCING ASK1-DEPENDENT ENDOTHELIAL CELL DEATH

Cassandra Coleman ('11), Joseph Bellairs ('11), Alexander Boches ('11) and Roxanne Ghazvinian ('11), Chemistry

The prodrug Laromustine (1,2-bis[methylsulfonyl]-1-[2-chloroethyl]-2-[(methylamino) carbonyl] hydrazine; Cloretazine; VNP40101M) yields methyl isocyanate and a chloroethylating species (90CE) upon decomposition in situ. Laromustine's cytotoxicity is principally attributed to 90CE via a proposed mechanism that involves interstrand DNA cross-linking. However, the role of methyl isocyanate in the antineoplastic function has not been fully defined. A derivative of Laromustine that generates only methyl isocyanate and not the chloroethylating species, 1,2-bis[methylsulfonyl]-1-[(methylamino) carbonyl] hydrazine (101MDCE), is reported here to induce endothelial cell (EC) death through a non-apoptotic pathway at both relatively low (50 μM) and relatively high (200 μM) concentrations. 90CE, which lacks carbamoylating activity, did not induce this cell fate. 101MDCE, but not 90CE, also inhibited EC tube formation in vitro, a process involved in angiogenesis, which is critical for tumor growth and metastases. To understand the molecular mechanism for 101MDCE-induced EC death, we examined signaling pathways activated by 101DMCE in ECs. We found that 101DMCE, but not 90CE, activated JNK/p38 pathways and their upstream apoptosis activator signal-regulating kinase 1 (ASK1) using Western blot analyses. In resting ECs, ASK1 forms a complex with the reduced form of thioredoxin (Trx). The single cysteine residue in ASK1 (C250) and C32 or C35 in Trx are critical for this interaction. 101MDCE effected ASK1 dissociation from Trx, but not from the phosphoserine-binding inhibitor 14-3-3, in vitro and in vivo, consistent with the known reactivity of methyl isocyanate with the sulfhydryl groups of cysteine residues.

EXAMINATION OF SMAD3'S ROLE IN MEDIATING CELL INVASION, AND ITS IMPLICATIONS IN BREAST CANCER PROGRESSION.

Abigail Collett ('11), Chemistry

Numerous intracellular signaling pathways play important roles in influencing cancer development and progression. Such pathways often regulate cancer-relevant cellular responses such as cell proliferation and migration. The Transforming Growth Factor Beta (TGF beta) signaling pathway is of particular importance, and has been shown by numerous groups to have the capacity to induce both tumor progressive and tumor suppressive types of responses in breast cancer. Numerous proteins are involved in TGF beta signal transduction; some likely mediate the tumor-progressive effects of TGF beta, whereas others likely mediate the tumor-suppressive effects. A strong interest is therefore to determine which particular proteins are important in regulating different tumor-relevant responses. To this end, our lab has developed mammary epithelial cells that express different amounts of Smad3, an important protein intermediate in the TGF beta pathway. In the current study, we used these cells to examine the importance of Smad3 in TGF beta-induced cell migration and invasion, two processes important for cancer progression. Cells were treated with varying concentrations of TGF beta for 48 hours, and migration or invasion through a porous membrane was quantified visually. TGF beta induced migration to a similar extent in all cell types, although the total number of migrating cells was decreased in cells with reduced Smad3. In contrast, TGF beta did not significantly induce invasion; however, overall invasion was decreased in cells lacking Smad3. These results demonstrate that Smad3 plays complex but important roles in TGF beta-mediated cellular responses.

THE EFFECT OF TEMPERATURE ON GROWTH OF TWO STRAINS OF THE PATHOGENIC FUNGUS, *BATRACHOCHYTRIUM DENDROBATIDIS*

Kaitlin Curran ('14), Elise Begin ('13) and Sarah Nalven ('13), Biology

Bactrachochytrium dendrobatidis (Bd), a pathogenic fungus that causes chytridiomycosis and potentially death to its amphibian host, is associated with global amphibian population declines. Current strains likely originated from a single ancestor, and such divergence has generated genetic differences. Little is known about how different strains grow, however, so we explored the hypothesis that two strains, one isolated from a frog in Maine (JEL258) and one isolated from a frog in Panama (JEL423), exhibit differential growth. In addition, optimal growth of the fungus occurs between 17°C and 23°C. However, growth at more extreme temperatures must also be studied given the range of conditions that amphibians experience, and that some species can clear infection at higher temperatures. We predicted that JEL423 would grow more vigorously than JEL258, based on qualitative observations, and that JEL423 would grow to greater densities at higher temperatures than JEL258. We set up cultures at different concentrations in 96-well plates and incubated them at 4°C, 18°C, 23°C, 35°C, and 40°C. We measured optical density (OD490) for seven days, and acquired images from culture flasks, incubated at the same temperatures and concentrations, for five days. Image area occupied by zoospores or by sporangia were quantified with Microvea. Preliminary results show that JEL423 indeed grows to greater densities at warmer temperatures than JEL258, and produces more zoospores at each temperature than JEL 258. This variation in growth may help explain the greater virulence of Bd strains in Central America, and the lack of population declines in Maine amphibians.

THE EFFECTS OF ENVIRONMENT/ACTION CONGRUENCY ON IMAGINATION INFLATION

Elizabeth Davis ('12), Katherine Gorman ('12) and Kenneth Peterson ('12), Psychology

The impact of congruency between action content and the location where the action takes place or is imagined on imagination inflation was examined using a variation of Goff and Roediger's (1998) imagination inflation paradigm. Forty-eight Colby College students performed or imagined simple action statements one or five times. Twenty-four participants completed the study in a dining hall; the others were in a classroom. The actions were either congruent with the location in which they participated, such as writing in the classroom, or incongruent, such as writing in the dining hall. Immediately after the encoding session, participants made remember/know judgments about which actions they actually performed. One week later, participants made remember/know judgments again. As predicted, participants were more likely to remember performing imagined actions that were congruent with the environment, probably because of richer integration of perceptual details into the memory trace. These results indicate that perceptual information does enhance imagination inflation, and that individuals imagine actions more vividly when imagination takes place in relevant environments.

THE VITAL COLLABORATION: A PERSPECTIVE ON MUSICAL THEATER AS A PLATFORM FOR SOCIAL DISCOURSE

Alexandra Desaulniers ('11), Theater and Dance

Theater and performance have long commented on an ever-evolving landscape of cultures, societies, and politics around the world. Through audiences' apperception of ideas and themes present in these productions, we might come to expect a performance to not only make us think about something, but perhaps also to make us act on those themes. My thesis examines how these concepts are at work in various theatrical genres and more specifically in musical theater, citing four modern American musicals as examples of the genre's capacity to illuminate the human condition and spark social and political discourse. I argue that these productions have successfully stimulated social commentary on their respective themes through the cohesive engagement of the genre's most basic components: text, song, and dance – a congruence I term the "Vital Collaboration." To reinforce my position that musical theater can achieve such presentation, I offer my own ideas on experimentation with the form through a series of ethnographic interviews and their potential application as themes in a conceptual musical theater production. Through both historical and theoretical analysis and this original ethnographic study, I support the claim that musical theater as a genre can, has, and should continue to exist as a platform for social and political discourse.

THE HUMAN HEALTH EFFECTS OF HARMFUL ALGAL BLOOMS

Elizabeth Eaton ('11) and Amelia Fogg ('11), Environmental Studies

Harmful algal blooms (HABs) result from the excess growth of algae in coastal waters that can block oxygen to organisms and plants below the surface. Human agricultural activities may cause run-off of nutrients that increase the growth and intensify the effects of HABs. Shellfish and other marine organisms may be poisoned, and new studies have found airborne toxins that pose a risk to human respiratory health. This report identifies potential harm to humans and the environment from HABs and future areas of study necessary to understanding these events.

THE RIPPLE, RIPPLE EFFECT: HOW RACIAL STEREOTYPES AFFECT BLAME TO DISTORT MEMORY

Samantha Eddy ('13), Lauren Becker ('13), Rebecca Levenson ('13) and Sean Padungtin ('13), Psychology

We tested how the racial stereotype effect on blame affected memory which we called the "Ripple, Ripple Effect". Previous research has found that moral blame distorts memory. It has also been found that racial stereotypes distort amount of blame. To test the Ripple, Ripple effect we conducted a 2 by 3 between-subjects factorial in which participants were in 1 of 6 conditions. Participants were asked to listen to a recording involving car theft about a person named Sean. Participants were either told that Sean was black or white. Then they were either given no contextual data, or supplementary contextual information that presented Sean as a good or bad person. Our dependent variable was the estimated price of the car that participants were asked to recall from the story they heard in the general story. We found a significant effect for race in which participants estimated a higher price of the car across all contextual conditions in which Sean was white. This challenges previous data that has been found.

MEMORIALIZING THE DEAD IN THE VICTORIAN AGE

Nicolyna Enriquez ('11), Art

This paper explores Victorian mourning culture—burial practices and visual culture—and how such practices and objects aimed at retaining and celebrating the memory of the deceased. I consider these nineteenth- and early twentieth-century rituals in Great Britain, the Continent, and the United States and their transformation in response to the Industrial Revolution and the rise of the middle class. Along with a study of mourning objects and grieving rituals, I look at the changing religious beliefs concerning the afterlife and, in particular, the new conception of heaven into a place where family members are reunited. The performance of mourning rituals and the use of commemorative objects in this period are thus transformed into something comparable to what Pierre Nora has termed a milieu de mémoire. As it was the family's duty to maintain the memory of the deceased, these objects served a vital purpose in preserving the memory of the dead.

[DE]SEXUALIZING THE SAINTS IN THE MIDDLE AGES

Nicolyna Enriquez ('11), Art

This paper discusses how, despite Christianity's view of the body as inherently evil and corrupt, sexuality was intricately linked with the medieval conception of sainthood. This paper examines the emphasis placed on sexuality and the body in the Middle Ages through hagiographic texts, relics, and iconography. I consider the distinction between the genders and between the sacred and the profane. Sexuality, despite severe repression from the church, was an inescapable fact of life and made itself manifest through imagery and tales. Similar to Freud's theory of sublimation, the negation of sexuality through recurring themes, such as the spurning of the pagan lover or torture and martyrdom in the name of chastity, only asserted the saint's sexual nature and also that of the viewer. Could these blatantly erotic images be an attempt to access the pure through an understanding of the impure, as we see through the lives and writings of Church Fathers such as St Augustine or St Jerome? Or, were they only expressions of the human mind's base impulses? And how do we reconcile images of martyrdom, which tended to reach levels of torture and self-mutilation that verged on sadomasochism, with the medieval view of sanctity?

DIE ERFOLG DER PUPPEN: AUFKLÄRUNG DURCH KOMPLIKATION DES SUBJEKTS UND OBJEKTS

Meredith Fast ('11), German/Russian

Immanuel Kant and Moses Mendelssohn stated that by separating the objective and subjective, the public and private form of oneself, one is able to experience freedom and equality by creating one's own opinions. Thereby, a society may achieve enlightenment. In my research project, I discuss the objectification and absence of women in Thor Kunkel's novel 'Schaumschwester,' which demonstrates the current inequality of the human race, even though both aspects of the self are separated. In 'Schaumschwester,' however, the robots, resembling gorgeous women and are created to serve men as sexual objects, defy the Mendelssohn and Kant theory of the split self once they develop emotions and the ability to think freely. They become instead a mixture of subject and object, which appeals to Theodor Adorno's theory of complicating the difference between subject and object. This theory gains momentum when the robots conquer the unequal human race, living forever in equality and enlightenment. This proves that we must complicate the line between subject and object, male and female, in order to achieve equality and enlightenment

DESTRUCTION AND DEVELOPMENT: THE IMPACTS OF TOURISM ON MANGROVE FORESTS.

Sarah Flanagan ('11), Juliette Gorson ('11) and Matthew Silverman ('12), Environmental Studies

Mangroves are an important tropical wetlands nursery habitat worldwide. However, these essential habitats are threatened by human activity, particularly development, aquaculture, and extraction of resources. Tourism is a large sector of the economy in many countries where mangroves are threatened, but the impacts of tourism can be both positive and negative. We evaluated the impacts of tourism on mangroves by focusing on three case studies: Ecuador, India, and East Africa. Each case study was graded based on ecotourism guidelines. Mangrove tourism is still limited in India and East Africa, but Ecuador is implementing a large mangrove ecotourism program. Ecotourism, when supported by governmental regulations, is a promising way to transition from an over-exploitation of the mangrove resources to a more sustainable income generator. Coupled with implementation of ecotourism, awareness both locally and globally is imperative to preserve the precious mangrove habitats worldwide.

DO MALE PHYSIOLOGICAL CONDITION AND TERRITORY QUALITY AFFECT FEMALE MATE CHOICE IN THE BROWN ANOLE, *ANOLIS SAGREI*?

Sarah Flanagan ('11), Biology

Female mate choice is an important component of sexual selection because traits that influence male mate preference, such as physiology and resource acquisition, are favored. In lizards, the importance of mate choice remains unclear as reported results from experiments are contradictory. In this study, I investigated whether male physiology and territory quality are important to female mate choice for male Brown Anoles, Anolis sagrei. I tested the hypotheses that female A. sagrei prefer males with greater physiological capacities, and prefer higher quality territories, regardless of male phenotype. To test these, male A. sagrei were first rated for endurance then used in mismatched-pair female mate choice trials. Preference was scored as the amount of time the female spent actively engaging a male. Male activity level was also scored. Blood glucose levels were measured before and after the endurance tests, and before and after the mate choice trials. Finally, levels of stored glycogen were measured in leg muscle and liver samples collected after a mate choice trial. In 11 of 15 trials, the female spent more time with the male with the higher endurance score, and females preferred males with lower liver glycogen levels. Second, females were given a choice between a male in a territory supplemented with plants, and a size-matched male in a bare territory. Females spent more time with one male than another, and did not exhibit a preference for a territory. These results suggest that female A. sagrei exhibit preferences for male traits regardless of territory quality.

FEMALE MATE CHOICE AND MALE PHYSIOLOGICAL CONDITION IN THE BROWN ANOLE, *ANOLIS SAGREI*

Sarah Flanagan ('11), Biology

Mate choice is an important component of sexual selection because it favors certain traits that affect mate preference. Such traits can include male physiology, morphology, and his ability to acquire resources, such as food and territory. For example, female anoline lizards often exhibit a preference for males that can perform greater frequencies of courtship behaviors, such as headbobs. Energetically costly courtship behaviors require a male to be in good physiological condition, and males that perform well also tend to exhibit greater endurance during locomotion. Female mate choice in lizards, however, is not fully understood. In this study, I tested the hypothesis that female brown anoles (*Anolis sagrei*) prefer males with greater physiological capacities. Male brown anoles (*Anolis sagrei*) were tested for endurance and the endurance indices of the males were used to match the males for female mate choice trials. During an hour-long trial, the female was able to freely move between the two males, and her preference for each male was scored as the amount of time she spent actively engaging each male. During these trials, the amount of time each male was active was quantified to estimate his energetic expenditure, and each male was ranked accordingly. Biochemical measurements of blood glucose levels were recorded before and after the endurance tests, and before and after the mate choice trials. Finally, levels of stored glycogen were measured in leg muscle and liver samples that were collected directly after the mate choice trials. Liver glycogen and female choice scores were negatively correlated, indicating that females prefer males that depleted the most liver glycogen. Details on the results of the behavioral and biochemical assessments will be discussed.

THE SOLUTION TO POLLUTION IN NOT DILUTION: U.S.-CANADIAN COOPERATION TO REDUCE ACID RAIN IN NORTH AMERICA

Anna Franzen ('11), History

Over the past century, tremendous economic growth has enabled the United States to become the world's leading superpower. Unfortunately, this economic miracle came at the cost of widespread environmental degradation. Starting in the 1960s, scientists began to realize that a new type of pollution, known as acid rain, was poisoning northeastern lakes and streams, stripping forests of their leaves and damaging crops and buildings. The damage was not limited to the United States: Canada suffered heavily from sulfur dioxide and nitrogen oxide emissions originating in the United States and soon called for joint U.S.-Canadian environmental policies to reduce emissions in the future. During the 1970s and 1980s the United States resisted such requests, citing the exorbitant cost of emissions regulations and a lack of detailed scientific knowledge as explanations. U.S. inaction led to increasing tensions with Canada, which only relaxed when the country finally passed an amended version of the Clean Air Act in 1990 that set explicit goals to reduce acid rain.

KUNISADA'S OIRAN

Yin Fu ('11), Art

Through much of his life, Utagawa Kunisada (1786-1865) was unquestionably the most famous printmaker of the day. Kunisada launched his career first as a book illustrator, and he soon gained fame and success. In about 1809, he turned to the genre of bijinga, and started to design single sheet prints depicting beautiful women – frequently geisha and celebrated courtesans from the Yoshiwara pleasure quarters. Kunisada had a good understanding of public taste and he was regarded as one of the "trendsetters" in fashion. I identified the woman in one of his bijinga prints as an oiran, the highest-ranking courtesan, by the way she dresses and poses. I also discussed the culture meaning of courtesans and their roles in Japanese society. In addition, the way many ukiyo-e artists signed and sealed their works is of great interest for Japanese art scholar. Many ukiyo-e artists liked to change their signatures and seals, especially

In the case of Utagawa Kunisada, which is causing a lot of confusion for prints collectors. I analyzed his signature and seal style in this particular print, and tentatively dated this work as completed after 1825 and before 1844.

FROM VICTIMS AND VILLAINS TO PROTAGONISTS: IMMIGRATION AND CITIZENSHIP IN ITALY

Rachel Gleicher ('11), International Studies

The Italian media, political parties, and immigrant-related social service organizations on all sides of the spectrum have contributed to the creation of various one-dimensional perceptions of Italy's immigrant communities which have functioned to deny immigrants' formal citizenship status and consequently, attempted to impede their access to the basic rights and privileges national membership guarantees. While left-leaning media outlets, organizations, and individuals tend to portray immigrants as victims draining Italy of its social, economic, and material resources, the Italian right often characterizes Italy's immigrant population as villainous intruders incapable of integration due to cultural difference and in some cases, a natural tendency towards amorality that makes it impossible for them to adhere to Italian legislation. Both of these viewpoints, I will argue, work to deny immigrants' protagonismo and promote the belief that immigration is a problem rather than a potential resource. In spite of these circumstances, however, it is also true that many immigrants are able to exercise the rights and privileges they have been legally denied due to a lack of national membership. This resistance often begins with the decision to "illegally" escape from their country of origin, continues through their struggle to overcome daily obstacles involved in Italian bureaucracy, and shows itself in their ability to launch protests against unjust Italian legislation which has promoted racism and xenophobia. This presentation, therefore, attempts to show both the persistence of inequality in regards to the distribution of Italian citizenship as well as its contestation through various forms of immigrants' resistance.

PLAYZAM: AN ONLINE LEARNING ENVIRONMENT

Peter Graham ('12) and Sarah Harmon ('12), Computer Science

America's typical classroom setting is limited, stressful for students, and doesn't provide students with the resources they need to grow. It's also difficult to accommodate everyone in a traditional classroom setting, and students are expected to be constantly alert in a confined, static environment. At the same time, studies have consistently shown that students learn more when studying is contextually enriched, fun, web-based, and includes spaced repetition (e.g., Smith & Rothkopf, 1984; U.S. Department of Education, 2009). All of these findings suggest there is a need for more individualized education. Here, we present "PlayZam", a website to help students study more effectively through personalized learning and fun, educational games. Study material can take the form of images, sounds, or text, providing students with the opportunity to practice a wide range of skills. PlayZam is an excellent tool for teachers as well. Posting fun assignments and monitoring overall student performance is easy, which means teachers can quickly identify areas where students are struggling. Whether you're a teacher, student, or simply want to study something new, PlayZam is a great way to learn just about anything.

CRY ME A BEAVER: FALSE MEMORY FOR MEDIATED AND DIRECT WORD LISTS

Elisabeth Grasser ('11) and Jessica Blais ('12), Psychology

In the Deese-Roediger-McDermott paradigm, participants study lists of words (e.g., water, barge, flow) that are all directly related to a non-presented critical lure (e.g., river). On memory tests, the CL is often falsely remembered. According to activation/monitoring accounts, activation spreads in a related network to the CL. At test, monitoring failures result in errors. We compared mediated (e.g., jog-river, where the relationship is mediated by 'run') and direct word lists. Participants studied 12 word lists that were directly (direct lists) or indirectly related to a critical lure (mediated lists). After each list, participants were asked to: 1) recall as many words as possible (recall condition); 2) recall as many words as possible without including the CL (warned condition); 3) guess the CL (guess condition); or complete arithmetic problems (math condition). After all 12 lists, participants completed a recognition task in which they were presented with both old and new words . Overall, individuals remembered directly related studied words better than they remembered mediated studied words, and the overall pattern across conditions was similar for the two types of list. However, the warning decreased false memory for direct lists but increased false memory for mediated lists. In addition, guessing increased false memory for mediated lists, but decreased it for direct lists. These results suggest that warning participants to not recall the non-presented critical item or encouraging them to guess may actually result in a reactivation of the pathways associated with the critical item; however, because of the difficulty in guessing the lure, this does not enhance monitoring, thus resulting in higher rates of false memory.

THE NEUROPROTECTIVE EFFECTS OF MELATONIN ON *UCA PUGILATOR* X-ORGAN CELLS EXPOSED TO GLUTAMATE EXCITOTOXICITY

Elisabeth Grasser ('11), Biology

Glutamate is the primary excitatory neurotransmitter in the mammalian central nervous system. In extremely high concentrations, glutamate has exhibited neurotoxic effects by causing the release of large quantities of reactive oxygen species (ROS), which in turn can induce neural cell death. This process is referred to as glutamate excitotoxicity. Glutamate excitotoxicity has been implicated in multiple neurodegenerative diseases, and has also been thought to contribute to brain damage resulting from stroke and head trauma.

The hormone melatonin, an antioxidant and free-radical scavenger, has demonstrated neuroprotective effects by promoting neurite outgrowth in Fiddler crab X-organ cells. The present study attempts to gain insight into whether melatonin can combat the detrimental effects caused by glutamate excitotoxicity. X-organ cells were cultured in simple medium, 10 mM glutamate solution, and a 10 mM glutamate + 1 μM melatonin solution and photographed after 24 hours and 48 hours in culture. Neurite growth was determined by measuring total neuron area and subtracting cell body area. After 24 hours, cells in the glutamate treatment experienced significantly less neurite growth than cells in the control condition, while cells in the glutamate + melatonin treatment experienced significantly greater neurite growth than the control. Cells in all conditions continued to grow through 48 hours. Not only did melatonin effectively block the detrimental effects of glutamate excitotoxicity but it also reversed them, promoting neurite growth that surpassed that of the control. Thus, the results of this study demonstrate that melatonin can effectively rescue cells from glutamate excitotoxicity and provide support for the use of melatonin as a treatment for neurodegenerative diseases.

EXPLORING THE EFFICACY OF DIETARY CHOLINE SUPPLEMENTATION IN PREVENTING AND TREATING THE SYMPTOMS OF CONCUSSION

Tory Gray ('11), Psychology

Concussions are one of the most common injuries that occur in a wide variety of high impact sports. However, the chronic neurological effects of recurrent concussions are not well understood. The goal of the current research is to examine whether dietary choline supplementation can prevent and/or mitigate the negative sequelae associated with mild traumatic brain injury (mTBI) and/or concussion in adult rats. Choline is an essential nutrient that has many purposes in the body, both metabolic and neuroprotective. Research suggests that it is remarkably neuroprotective against brain injury, enhancing levels of growth factors and reducing the inflammatory response. This suggests that it may also be protective against concussion and may help to reverse the negative outcomes associated with it. To study this, 50-day-old male Sprague Dawley rats were placed on one of two synthetic diets: choline supplemented or standard choline (AIN76A containing 5, 1.1 g/kg, respectively). These diets were continued throughout the duration of the study. To replicate the neural trauma characteristic of mild, repetitive head injuries, a modified version of the impact-acceleration model—a simple weight-drop paradigm of closed-head injury (CHI)—was used. Half of the rats from each diet group were subjected to CHI, meanwhile the other half underwent a sham procedure. The injury occurred twice, separated by a week. Hippocampal-dependent spatial, working, and reference memory were assessed using the water maze. A small subset from each diet treated group also underwent CHI but were not behaviorally tested; the injured rats in this case sustained 3 injuries, each separated by a week. Based on a preliminary analysis of behavior, there is emerging evidence that CHI, overall, facilitated memory.

INSPIRING THE NEXT GENERATION OF NEUROSCIENTISTS: BRAIN AWARENESS WEEK IN WATERVILLE, MAINE

Tory Gray ('11), Morganne Kraines ('11) and Nora McCall ('11), Psychology

Brain Awareness Week is an international event held yearly during mid-March during which neuroscience researchers educate the local community about general brain health and recent developments in the field of neuroscience. Through a Sandy Maisel grant from the Goldfarb Center for Public Affairs and Civic Engagement, the inaugural Brain Awareness Week (BAW) was held in Waterville, ME this year. We traveled to the Society for Neuroscience meeting in San Deigo, CA to learn from other institutions that have held BAW events in past and to gather interesting research to share at our events. We presented at Waterville High School and the Albert S. Hall School, donated educational books to all four Waterville public schools, and are currently working with principles and teachers at all schools to develop BAW 2012 programs for students. BAW activities provided students with information on brain structure and function, and the brain's involvement in mental health. Through this work, we hope to educate and inspire the public to become actively involved in learning about brain health and in keeping their brains healthy throughout their lives.

OWN-AGE BIAS IN FACE RECOGNITION OF EMOTIONAL STIMULI

Katherine Hallett ('13), Chelsea Ammons ('13), Hillary Keach ('13) and Adam LaViolet ('13), Psychology

Previous research has found evidence for a contact-based explanation for the own-age bias and, based on the higher ability of trainee teachers to recognize children's faces, theorized a motivation-based explanation for age bias (Harrison & Hole, 2009). Other research found that older adults had poorer performance in recognizing negative emotions than younger adults (Ebner & Johnson, 2009). The purpose of this experiment was to determine whether facial recognition is affected by own-age bias and the emotional state of stimulus faces. Young adults were asked to judge the expression (happy, neutral, surprised) and age (young, old) of facial stimuli. Results showed that young participants were better at correctly estimating the age of stimuli in their own age group, but when judging older faces the expression of the stimuli facilitated judgment accuracy. Results of a recognition test of the stimuli showed that participants were more likely to remember happy stimuli of their own age group than neutral stimuli. Participants were better at recalling surprised older faces as opposed to happy or neutral older faces. These results support the own-age bias of facial recognition.

MEASURING AND MODELING SENSORY CONFLICT

Sarah Harmon ('12), Mathematics

Successful navigation in a 3-D environment requires input from multiple sensory systems which interpret proprioceptive, somatosensory, vestibular and visual cues. When these central systems are in disagreement due to a change in movement or position, motion sickness occurs. The degree of disagreement influences the 'provocativeness' of the motion; thus, if a subject has a vestibular disorder they may experience perceptual disturbances more frequently and with greater intensity. Similarly, astronauts who undergo low or zero-g environments will receive inputs that are different from those received on Earth. Consequently, being able to describe sensory conflict quantitatively is greatly beneficial for medical and scientific fields. Here, I explain the concept of such a measure and its implications for even seemingly 'mysterious' perceptual disturbances.

IMPACTS OF CHEMICAL OBESOGENS ON THYROID SIGNALING

Nina Hatch ('13) and Lindsay Garrard ('13), Environmental Studies

Chemical obesogens act through many mechanisms in the endocrine system including via the thyroid gland. Because the thyroid gland itself plays an integral role in the body's metabolism, there is strong evidence to suggest that obesogens can affect body weight regulation. Our research looks at the different biological mechanisms of obesogens on the thyroid.

THE MARGINALIZATION OF THE MODERN CITY IN LORD BYRON AND THE SHELLEYS' AUTHORITATIVE REPRESENTATIONS OF ROME

Elizabeth Hathaway ('11), English

In the 19th Century, the British Romantics, including Lord Byron and the Shelleys, flocked to Rome to contemplate eternity and civilization in the shadows of some of the most storied ruins in the world. The literary success of Byron and the Shelleys' musings went on to hugely impact the modern tourists encounter with the city of Rome, as travelers sought to follow in the footsteps of these literary greats. Therefore, by looking closely at the Rome Byron and the Shelleys chose to represent in their writing, we can better understand the tourist's disenchantment with the living, real, modern city of Rome. This presentation will focus on Byron and the Shelleys' portrayal of Rome, and how their condescension towards the modern "second city" is contributing to the city's current struggle with urbanization and expansion.

MAGAININ ANTIMICROBIAL PEPTIDE EVALUATED AS A CANDIDATE FOR AAV GENE THERAPY FOR CYSTIC FIBROSIS AIRWAY EPITHELIUM

Hana Haver ('11), Biology

Cystic fibrosis (CF) is the most prevalent single-gene mutation causing disease and is characterized by a mutation in the cystic fibrosis transmembrane conductance regulator (CFTR), which controls chloride movement in and out of the cell. Defects in CFTR cause a salt imbalance, causing many patients with cystic fibrosis to suffer from chronic lung disease caused by persistent bacterial infections that compromise lung function. Traditional antibiotics are used to treat these infections, but they can select for resistant bacterial strains when taken long term. Magainins are a class of cationic antimicrobial peptides secreted from the skin of Xenopus laevis. The negative charge found on bacterial cell membranes attracts the positive peptides, which then create pores in the membrane, causing the bacteria to lyse.This project aimed to look at the potential use of the magainin gene for gene therapy for individuals with cystic fibrosis. From RNA isolated from Xenopus laevis tissue, cDNA was synthesized. Zasloff's original magainin cDNA was used to create primers, with restriction enzyme sites NOTI and ECONI. The isolated gene was amplified using polymerase chain reactions. The subsequent steps to be completed include ligation of the gene into an AAV2 backbone, transformation of airway epithelial cells isolated from the lungs of a cystic fibrosis patient, and subjection of these cells to exposure to Pseudomonas aeruginosa. To measure the extent of the transformation, magainin peptide antibodies will be used in an ELISA to quantify the success of this gene therapy technique. The results of these further experiments will indicate the effectiveness of the Magainin antimicrobial peptide use in AAV gene therapy in cystic fibrosis patients as a natural and persistent antibiotic.

THE BIASED WHITE READER: READING, REVISITING, AND REVISING RACIAL IDENTITY THROUGH MARK TWAIN'S PUDD'NHEAD WILSON AND TONI MORRISON'S BELOVED

Catherine Hawkins ('11), English

This thesis project combines literary scholarship with creative non-fiction. Through divulging my own experiences reading literature as a white female, I ask if, how, and to what extent an individual's racial ideology affects her understanding of the literature she reads. I focus on the "biased white reader," a rough sketch that derives mostly from what I have observed about my own racial biases and also from what I have read about how modern-day white Americans, collectively and individually, construct racial ideology. Using the profile of the "biased white reader" as a starting point, I approach Mark Twain's Pudd'nhead Wilson and Toni Morrison's Beloved in order to interrogate the extent to which white biases prevent the reader from engaging with the imaginative texts of Twain and Morrison and the extent to which each novel may be transformative by offering to the reader insights about and/ or revisions to her racial biases.

AGROFORESTRY PRACTICES IN SUMATRA

Jennifer Helm ('11), Lauren Hendricks ('11) and Andrew Maguire ('11), Environmental Studies

Agroforestry, the practice of combining trees and other traditional crop systems in the same space, has been suggested as a sustainable alternative to monocultures in the tropics. Agroforests are functionally similar to natural intact forests and are an economically stable resource for farmers. Indonesian farmers on Sumatra have been practicing damar agroforestry for over 100 years. Damar agroforests produce resin for trade on the global market as well as food and firewood that benefit the local people. Lessons from the damar agroforests of Sumatra can be applied to agroforestry and increasing the sustainability of cultivated ecosystems throughout the world.

THE DAVIS INTER-CULTURAL DIALOGUE PROJECT: AN INVESTIGATION INTO THE IMPACT OF THE MAINSTREAM MEDIA IN GERMANY ON THE IDENTITIES AND OUTLOOK OF YOUNG GERMAN MUSLIMS

Michael Hempel ('11), International Studies

The Davis Inter-Cultural Dialogue Project was originally conceived with the goals of raising awareness among the student bodies of several universities in France and Germany (in Frankfurt, Tuebingen, Berlin, Paris, and Caen) regarding varying perspectives on ways to foster immigrant integration in Western Europe. The project proposed to create this dialogue by engaging both first and second generation immigrant students, â€œnativeâ€ European students and certain businessmen and workers in order to discuss the integration of minority students and workers in these fields. (â€¦) In conclusion, should the number of individuals be estimated who have directly benefited from this, perhaps, unconventional peace project, it can be confidently stated that we interviewed at least eighty students, and come into contact through dialogue sessions, survey hand-outs, and other project related events, with as many as three hundred others. These individuals consisted mostly of German and French students of migratory background (primarily of Turkish, Moroccan, and Algerian background). We believe we provided a safe and open space for each of these students to discuss issues of identity, and to air some of their frustrations. Furthermore, once the documentary, which has literally documented the project, is released to the same organizations with whom we worked this summer, the number of students who may yet in some way be positively influenced by those perspectives we have been able to capture on video can again, be multiplied. Although my enthusiasm about the documentaryâ€™s potential must be cautious, I do expect the film to experience some degree of success upon its eventual release among certain European university students.

POTENTIAL IMPACTS OF RENEWABLE ENERGY INFRASTRUCTURE ON FISHERIES

M. Henderson ('11), Matthew LaPine ('13) and Peter Smithy ('12), Environmental Studies

Renewable energy infrastructures present exciting opportunities to harness power for coastal needs. These systems typically require intensive construction; many continually redistribute water and associated biota as part of their function. This study reviewed tidal and offshore wind as well as less common systems including osmotic, wave and thermal energy systems. A comprehensive literature review found that while renewable energy offers a promising future, current systems carry various negative impacts to marine systems and, subsequently, to local fisheries. This study focused primarily on the New England coast.

ATLAS OF MAINE: ECOREGIONS, LANDCOVER AND CONSERVED LAND IN DOWNEAST MAINE

Lauren Hendricks ('11), Environmental Studies

The Downeast Region of Maine is home to several different ecoregions, as well as a variety of conserved lands. This map shows the land cover and areas that are currently being conserved in this region. Created by Lauren Hendricks ('11). Data from the EPA, GeoBase, and the Maine Office of GIS. Data are projected in NAD 1983, UTM Zone 19N.

IMPACT OF WIND TURBINES ON BIRDS

Lauren Hendricks ('11), Keith Love ('13) and Molly Susia ('13), Environmental Studies

The potential for wind energy in the United States is great and has many benefits including lowering our dependence on oil and reducing green house gas emissions, but the big question is whether those benefits outweigh the cost of its effects on wildlife and humans. While there are a number of bird fatalities due to wind turbines, they only account for .003% of human caused mortalities to avian species. Many other impacts including transportation cause more deaths annually than do wind turbines. Arguments have been made against turbines saying that as our energy production through wind power increases bird mortality will also increase. As our population grows and we continue to expand our urban sprawl other causes of bird mortality such as birds flying into buildings will increase as well. Our investigation aimed to assess the effects of wind turbines on wildlife and the viability of wind turbines as a source of alternative energy considering these potential impacts. The analysis accounted for wind patterns across the continental United States in accordance with dominant avian migration routes. As a final step, we considered the potential for wind energy in Maine. Our assessment found the most viable location to be the mountains that cuts through Southwestern region of the state so as to maximize energy while avoiding the Atlantic Flyway migratory route.

MODELING HABITAT SUITABILITY FOR MOOSE IN MAINE

Lauren Hendricks ('11), Environmental Studies

The moose is very important to Maine for many reasons, including economic and aesthetic value. It can also be very dangerous to vehicles. To effectively manage moose populations, it is important to know where these animals might be located. Using a Geographic Information System (GIS) and information about moose habitat preferences, I created a model of suitable habitat for moose in Maine. This model, based primarily on land cover, is supported by data on the actual distribution of moose in Maine.

THE NATURE OF D-PAX2 REGULATION OF CRYSTALLIN DURING EYE DEVELOPMENT IN *DROSOPHILA MELANOGASTER*

Emily Hilton ('11) and Jennifer Gemmell ('12), Biology

The structural integrity of a functioning eye in Drosophila is dependent on the protein Crystallin (Cry), which is expressed in the lens of the eye. Previous work has shown that D-Pax2 regulates the Cry gene, and therefore plays a significant role in lens development. It was shown that a 2.3 kilobase region upstream of the Cry gene contains a binding site for D-Pax2, and that this region alone is sufficient for Cry to drive GFP expression in the eye (Dziedzic et al., Developmental Dynamics, 238:2530-2539, 2009). However, mutation of the D-Pax2 binding site does not affect the function of the regulatory region, and two additional potential binding sites have been identified within the same region. Here we seek to determine whether regulation by D-Pax2 is direct or indirect by mutating all three binding sites and investigating if Cry can still drive GFP expression in the eye.

PHYSICAL APPEARANCE AND PERSONALITY RATINGS

Erika Hinman ('13), Danielle Dellarco ('13), Cynthia Garvin ('12) and Olisadumbi Okoh ('13), Psychology

The purpose of our study was to investigate whether viewing different body regions has an effect on ratings of attractiveness, intelligence, extroversion, and sociosexuality. Participants were all female Colby College students who volunteered to participate in the study. In total, 60 participants were recruited. The participants were between the ages of 18 – 22 years old and were separated into three different conditions: head only, torso only, or full body. A pre-test was conducted to narrow the stimuli into two categories: high and low attractiveness. In the pre-test, participants solely rated stimuli for attractiveness only. The stimuli that were rated most and least attractive in the pre-test were used as the stimuli for our main study; all participants in main studied viewed high and low attractive men. Using PowerPoint slides, participants rated twenty male stimuli on attractiveness, extroversion, intelligence, and sociosexuality. Attractiveness fulfilled the manipulation check because the stimuli consisted of ten attractive men and ten unattractive men. The results from this study showed a main effect for ratings of extroversion, sociosexuality, and attractiveness between high and low attractive stimuli. No main effect was found for ratings of intelligence. There was no interaction between body region and attractiveness on ratings of extroversion, attractiveness, intelligence, or sociosexuality.

ATLAS OF MAINE: HURRICANE SURGES AND FLOOD HAZARD AREAS IN DOWNEAST MAINE

Sarah Holmes ('13), Environmental Studies

This map shows sections of Downeast Maine designated as flood hazard areas and mean tide and mean high tide hurricane surges.

POSSIBLE LONG-TERM IMPACTS OF ORAL CONTRACEPTIVE USE ON FEMALE MATE CHOICE

Sarah Holmes ('13) and Katherine Muto ('11), Environmental Studies

Oral contraceptives, made up of a combination of synthetic estrogen and progesterone, are used daily by 38 million women nationwide. While extensive research has shown varying correlations between oral contraceptives and cancer, cardiac health, and clotting, the benefits of oral contraceptives, namely the significantly reduced risk of birth control and the preventative effect on ovarian cancer outweigh the potential proximal risks. However, recent research has revealed that oral contraceptives may also have significant long-term evolutionary impacts on human health. The pill has been shown to considerably alter mate preference in women. Women have been shown to prefer mates with differing immune genotypes (MHC complexes). This evolutionary development promotes offspring viability, as mates with distinctly different MHC complexes provide their offspring with more gene variation. However, research has shown that women taking oral contraceptives are more likely to be attracted to a mate with similar MHC complexes to their own. This could pose significant long-term impacts on human health as it reduces hybrid vigor and increases homozygous immune genotypes. As a result, offspring would be more likely to acquire certain recessive autoimmune disorders and be increasingly vulnerable to contracting different types of diseases throughout their life due to the lack of variation on MHC immune complexes.

EVALUATING MARINE PROTECTED AREAS: CASE STUDIES IN AUSTRALIA AND TANZANIA

Daniel Hoshino ('11) and Meghan Cornwall ('11), Environmental Studies

Mounting evidence has revealed the extensive degredation and depletion of the worlds marine ecosystems and resources. This has led to an increased pressure from conservationists to create marine protected areas (MPAs). The goals of MPAs are to strengthen fish stocks, preserve pristine habitats and create a buffer for management miscalculations while still allowing limited human use. Since

marine ecosystems are unique from terrestrial ecosystems, concepts and theories from on-land reserves cannot be transfered over to marine reserves. Because most theoretical work has been focused on terrestrial reserves, theories and models for marine reserves is lacking. This project aims to create criteria in order to assess the effectiveness of marine reserves. Two case studies were looked at, the Great Barrier Reef Marine Park in Australia and Mafia Island Marine Park in Tanzania. Both parks have shown effective management in their ability to adapt to changing conservation concerns but could show further improvement.

INTRODUCED LIONFISH IN THE CARIBBEAN AND THEIR DETRIMENTAL EFFECTS

Daniel Hoshino ('11), Kathleen Hamre ('13) and Michael Stephens ('13), Environmental Studies

The Indo-Pacific red lionfish Pterois Volitans has successfully invaded the Caribbean Sea and parts of the northwestern Atlantic Ocean. The introduction of this species has been attributed to release from aquaria, and especially to the escape of six lionfish from a broken tank during Hurricane Andrew. The lionfish population has quickly grown and spread throughout the region, colonizing several marine habitats at a variety of depths. They have established themselves as far as Bermuda and Panama, and have been sighted as far north as New England. Lionfish are voracious predators that feed on many types of prey, creating strong competition with native fish at the same trophic level. They have poisonous spines, which pose a danger to humans and other animals, and no natural predators to control their population. Studies have found that lionfish significantly reduce recruitment of coral-reef fishes. They are detrimental to Caribbean ecosystems through both predation and interspecific competition. Management strategies are being explored, but eradication is unlikely. The effectiveness of control methods will determine the degree of ecological impacts.

EXPERIENCING NATURE: THE INFLUENCE OF DIFFERENT SENSORY MODALITIES ON THE ATTENTION RESTORATION EFFECT

Katherine Houser ('13), Anna Caron ('13), Lauren McCrary ('12) and Kayleigh Monahan ('13), Psychology

A great deal of research has shown that exposure to nature can have many positive cognitive benefits for an individual. Attention Restoration Theory explains that natural environments modestly capture attention, allowing top-down processes to restore while bottom- up processes attend to the environment. It is unclear which single sensory modality, or combination of modalities, is the main gateway to the restorative benefit of nature. The purpose of this investigation was to first replicate the previous findings that natural stimuli was more restorative than urban stimuli, and second understand which modality is most effective in receiving the cognitive benefits of nature. Participants completed a battery of directed attention and fatiguing tasks, and then listened to, watched, or listened to and watched stimuli of a natural or urban environment. Participants completed tasks of directed attention after exposure to stimuli. We found that the majority of participants improved in the backwards digit span task over time; participants in the nature conditions improved more than participants in urban conditions, and participants in auditory conditions received the greatest benefit. No other results were significant.

RHEOLOGICAL PROPERTIES OF FOLDED LAYERS DURING NATURAL DEFORMATION AS DETERMINED FROM QUANTITATIVE GEOMETRIC ANALYSIS OF FOLD SHAPE

Eleanor Hoyt ('11), Geology

Rheological properties of naturally deformed rocks to play an important role in the formation of single-layer buckle folds. Traditionally, fold curvature was quantified by the curvature index method; however, this technique has provided variable results. This study further tests the consistency of the fold curvature method, as well as a new shape parameter, slope, against a series of computer-generated folds with known properties. The relationships of both shape parameters (curvature index and slope) to the flow-law stress exponent, as well as the estimated preferred wavelength, are tested through repeated measurements and graphical analyses. The results show an increasing effect of the stress exponent on fold shape with increasing viscosity contrast between layer and matrix. The analyses also show that curvature index measurements correlate strongly with stress exponent values for folds with a high preferred wavelength (L/h > 8). In addition, curvature analyses, as well as viscosity contrast and shortening estimates, were applied to naturally formed buckle folds from Cap de Creus, Spain and Ontario, Canada. These fold sets were formed in different environments and provide varying shortening and viscosity contrast estimates, yet the similarity of their curvature analyses suggests a similarity in folding mechanisms. Future application of these characterization methods to natural folds will allow for estimation of rheological properties from simple field measurements which, in turn, will provide insight into the way crust and mantle rocks deform.

EXPLORING INTERRACIAL REALITIES OF VIETNAMESE AMERASIANS TO THEIR MOTHERS, FATHERS, AND HOMELANDS

My Huynh ('11), Anthropology

This presentation introduces the history of Amerasian peoples during and after the Viet Nam American War. It explores the history of Amerasians and the relationships between American soldiers and Vietnamese women to the contemporary realities of Amerasians in Viet Nam and the United States. During my research, I have studied the interracial relationships between Vietnamese and Americans, and Amerasians with Vietnamese and American citizens, understandings of whether history shapes racism and prejudice, Amerasians understanding of family and war, Amerasian understanding of dual citizenship, and my understandings of the current realities of Amerasians. In addition to independent research, I have conducted oral history interviews with four Vietnamese Amerasians and one

mother on an Amerasian in Portland, Maine which I hope to present.

DIRECTED SYNTHESIS OF MIXED N,O-HETERA-CALIX[4]ARENES

Alex Hymanson ('12) and Jack Vernamonti ('11), Chemistry

Calixarenes are macrocyclic organic compounds based on an electrophilic aromatic substitution followed by an elimination of water and then a second aromatic substitution. These molecules contain other atoms and functional groups that assist in macrocyclic formation. The Katz Group focuses on oxacalix[4]arenes, which are oxygen-bridged macrocycles forming readily in meta-dihalogenated electrophiles. By placing activating groups at the meta position of the phenyl ring, the resulting molecule bears these functional groups in a distinct conformation where the functional groups are on opposing phenyl rings at the meta position. The high selectivity for oxacalix[4]arene formation results from thermodynamic product control due to the nucleophilic properties of oxygen. The direct synthesis of mixed N,O-Hetera-calix[4]arenes is performed and explored in our research.

DEVELOPING PRIMERS FOR HUMAN DNA FOR REAL-TIME PCR EXPERIMENTS

Byoungwook Jang ('14), Chemistry

We are using the polymerase chain reaction (PCR) to probe DNA damage by the cancer-causing agents diepoxybutane and epichlorohydrin in cultured human cells. Understanding and optimizing these PCR reactions is the first step in this project. The failure to amplify under optimum conditions can lead to the generation of undesired products and/or exclusion of the desired product. We are varying the many parameters contributing to the reaction, such as Mg2+ concentration, pH, and cycling conditions. The long-term goal of this project is to perform real-time PCR in human cells at the unexpressed and expressed regions of nuclear DNA, as well as mitochondrial DNA (mtDNA). We are working toward PCR products of circa 10 kilobase pairs in length. This semester I tested primers found in the literature, beginning with a 440 base pair fragment from the hypervariable region of human mtDNA.

THE RESPIRATORY BURST ACTIVITY IN ZEBRAFISH AT TWO DIFFERENT TEMPERATURES

Ashley Johnson ('13), Biology

Phagocytes are important to the immune function of zebrafish. They are white blood cells, such as neutrophils, macrophages, or monocytes, which engulf harmful foreign pathogens, such as bacteria, thus protecting the host. Respiratory burst is a process used by phagocytes to degrade internalized pathogens, such as bacteria. The cells convert oxygen to reactive oxygen species such as superoxide anion and hydrogen peroxide during respiratory burst. In this study, the effects of temperature on the respiratory burst activity in zebrafish was examined to see if a higher temperature would promote or discourage this particular type of immune response. Other studies have researched the effect of temperature on immune response in other fish, such as tilapia (Oreochromis niloticus). In this study found that and increase in the fishâ€™s normal temperature led to a decrease in leukocyte and cellular response. In the initial experiments of this study, groups of AB strain zebrafish (Danio rerio) were held at 78Â°F (their normal water temperature) and 88Â°F for a period of 24 hours prior to each experiment. Their white blood cells were harvested and treated with PMA (a standard stimulant of respiratory burst response in vitro) to determine the magnitude and kinetics of their respiratory burst response. There was no significant difference in respiratory burst activity in the fish held at two different temperatures. Because PMA is a non-physiological stimulant, which does not require phagocytosis, I will next switch to using bacteria as the activating agent in these experiments.

AN ANALYSIS OF GEOMETRIC AND SEDIMENTOLOGIC CHARACTERISTICS OF A MIDDLE PERMIAN FLUVIAL SYSTEM, KAROO BASIN, SOUTH AFRICA

Nathan Katsiaficas ('12), Geology

The Karoo Basin, South Africa, records sediments of Late Carboniferous to Permian age that represent glaciation and deglaciation of the supercontinent Pangea, that is, the transition from icehouse to greenhouse conditions in deep time. Following deglaciation, fully continental sediments first occur in the Beaufort Group, with the first river and flood plain deposits appearing in the Abrahamskraal Formation. In the area around Sutherland, Western Cape, these rocks are well exposed. River deposits and geometries therein reflect the climate at the time of deposition. A meandering river, for example, has one channel that winds across a floodplain, depositing fine-grained sediments during times of high flow along the banks as point bar deposits, and is generally indicative of a seasonally wet climate. Comparatively, a braided river has multiple channels and carries a greater sediment load than a meandering river, depositing coarser sediment often down a relatively steep gradient, generally reflecting a seasonally dry climate. This project examines a Middle Permian river system in the Abrahamskraal Formation. The river channel deposit erodes into coarse siltstones and consists of a conglomerate lag deposit, which is overlain by very fine to fine-grained sandstones that are ultimately overlain by coarse siltstones. The channel is multistoried with multiple bar forms and at least five channel cuts visible, indicating channel migration.

TECHNIK, GESELLSCHAFT, UND ALEXANDER KLUGES 'LERNPROZESSE'

Clifford Katz ('11), German/Russian

To be updated later.

'PRETTY, WITTY AND GAY!': QUEER COUNTER NARRATIVES IN WEST SIDE STORY

Qainat Khan ('11), Women, Gender, Sexuality

West Side Story was created by four artists from marginal communities (queer, Jewish, Leftist) during a period in US history that was fraught and highly repressive for members of these communities. How might their art reflect in its formal composition something of these historical and socio-political circumstances? This project undertakes three modes of queer methodology: queer historiography, queer temporality and queer conceptualization to answer this question.The formal musical and choreographic analysis and tries to wed together queer methodological approaches with formal and technical analysis. The goal of this project is to break down the myth that non-verbal arts like music and dance are apolitical and transcendent. Instead with these formal analyses, the project seeks to locate non-verbal arts both within their own hermetic politics and the politics of the culture in which they are produced and which they perpetuate.

'THE LIBERATOR WHO DESTROYED MY PROPERTY HAS REALIGNED MY PERCEPTIONS:' WHITE MASCULINE SUBJECTIVITY IN FINCHER'S SE7EN, FIGHT CLUB AND THE SOCIAL NETWORK

Qainat Khan ('11), Women, Gender, Sexuality

Director David Fincher has emerged both as a stylish filmmaker and an astute commentator of current culture. Many of his films deal with white masculine subjectivity. The three films surveyed all ask the question 'How does a white man distinguish himself?' and each addresses this question by interrogating different aspects of white masculine subjectivity. In Se7en, Fincher explores alienation, in Fight Club he interrogates violence and in The Social Network he looks at status. This presentation looks at his critique of contemporary white masculine subjectivity and asks whether the films promote a more open form of masculine subjectivity or whether they reify hegemonic masculinity.

THE EFFECTS OF SOURCE QUALITY AND PRE-EVENT EVALUATION ON JUDGMENTS OF BLAME

Shelley Kind ('13), Melanie Brown ('13), Holly Mawn ('13) and Jacqueline McLaughlin ('13), Psychology

Judgment is intrinsic to human social experience: it determines who our friends are, who we date, and who we avoid in the dining halls. What determines our attitudes toward others and how do these attitudes influence our subsequent evaluations of their behaviors? In our experiment, participants made blame judgments in relation to source quality and pre-event information. The participants received either information about a character in a story from a reliable source, unreliable source or control (no source). The information about the character was either positive or negative. After receiving information about the source and the character, participants read a story about the character, completed a filler task, and judged the blameworthiness of the character's action. The results suggested participants in the control group blamed based on the valence of the pre-event information. Participants in the reliable source group did not differ significantly in their judgments of the character's actions based on pre-event information. Participants in the unreliable source group showed the opposite pattern of results from the control group, assigning more blame to the character after receiving positive information about the character and less blame after receiving negative information about the character.

CONSTRUCTING A HEEGAARD SPLITTING OF THE COMPLEMENT OF ANTOINE'S NECKLACE

Sarah Kirker ('11), Mathematics

Heegaard splittings are partitions of 3-manifolds into two simpler, easier studied, 3-manifolds. They are very useful in 3-manifold topology and geometry as they often allow researchers to translated complicated questions about 3-manifolds into much easier questions about 2 manifolds. The goal of this project was to construct a Heegaard splitting for a very complicated non-compact 3-manifold, the complement of Antoine's Necklace. To do this I broke up the manifold into an infinite number of identical components and then used a process of amalgamation to create a Heegaard splitting of their union. I also pointed out a number of further research questions that could be explored using the work I have already done as a starting point.

INDEPENDENT STUDIES FROM LATIN AMERICAN STUDIES: SUSTAINABLE AGRICULTURE IN BELIZE AND ARGENTINE NATIONALISM AND THE MALVINAS ISLANDS

Matthew Klegon ('11) and Amelia Fogg ('11), Latin American Studies

This panel will allow to LAS seniors, Matt Klegon and Amelia Fogg, to share their independent studies with the Colby Community. Amelia will be making policy recommendations for NGOs who are helping Belizean communities develop sustainable agriculture. Matt researched how Argentina's national identity has been shaped by the Malvinas Islands. His research looks at how historical monuments and the educational system has defined this issue for Argentines.

THE EFFECT OF SPECIFIC FACIAL FEATURES ON JUDGMENTS OF MEMORY AND LIKABILITY

Emma Klein ('13), Eileen McGuire ('13), Nicholas Rimsa ('13) and Valerie Vesnaver ('13), Psychology

In a 2 X 3 X 2 mixed factor design participants were tested to determine the effect of specific facial features on judgments of memory and likability. Eye color was isolated to determine the relationship between participant eye color and the eye color of the facial stimuli he/she identified as familiar. Participants were asked to watch a rapid slide show of neutral faces of men and woman with either blue or brown eyes (internal features only). The number of times a stimuli's face was shown alternated between 0, 1, 5 times. Next the participants watched a slower slide show of all the stimuli in which participants identified each stimuli's likability on a five-point scale, as well as familiarity. Subjects eye color and sex were noted. It was predicted that there would be a statistically significant relationship between participant eye color and stimuli eye color, indicating preference for faces with the same eye color as the participant. Results still being processed. These results provide insight into the factors that aid in recollection and memory of previously seen faces and bring further insight to the "in-group" advantage in memory.

DOES PRACTICE MAKE PERFECT? A COMPARISON OF TESTING AND ENCODING STRATEGIES ON IMMEDIATE AND DELAYED RETENTION

Shannon Kooser ('14) and Constance Jangro ('13), Psychology

Does testing improve memory? The Testing Effect refers to the research finding that tests, even those without feedback, improve memory retention after a delay better than repeated studying of the information. This experiment is looking to expand on this established phenomenon. In phase one of this study, participants were shown a series of either 44 or 64 word pairs and asked to study the words any way they would like or by finding similarities between the words. In phase two, participants were then asked to either study the words again any way they would like, study them by forming a mental image combining the two words, or participants took a test on the word pairs. This test presented participants with one of the words and they were asked to record the corresponding word on the computer. After they submitted their response, they were given feedback on the correct answer. After a ten-minute delay, all participants were given a test on half of the word pairs, this time with no feedback. Two days later, another test was administered, again with no feedback, on the second half of the word pairs. Predicted results are that in the initial testing phase, participants will perform relatively equally, with a slight advantage for the "study-study" group. However, on the second testing phase, the Testing Effect will alter the results. For this test, the "study-study" group is likely to have the worst recall for words, the groups using the levels of processing will perform slightly better, but the group that took the test for study phase two will have the highest rate of correct word recall. These results will suggest that different levels of processing affect memory, but the testing effect plays the greatest role in aiding memory retention after a delay.

PHYLOGENIC ANALYSIS OF MICROORGANISMS: CHARACTERIZING BACTERIAL RELATIONSHIPS THROUGH BIOINFORMATICS AND HORIZONTAL GENE TRANSFER

Julianne Kowalski ('11), Biology

The etiologic agent of cholerae, Vibrio cholerae, utilizes N-acetyl-D-glucosamine binding protein A (GbpA) to adhere to chitinous substrates in human intestinal epithelia and in its marine environment. GbpA influences both V. cholerae's pathogenesis and environmental fitness. The purpose of this study was to examine the function of GbpA homologs in related aquatic microorganisms and to determine its potential role in horizontal gene transfer (HGT). Regarding HGT, chitin has been hypothesized to increase the transformation ability of V. cholerae (Meibom, 2005). Therefore we tested the ability of this substrate to enhance conjugation events. Bacteria isolated from crab and lobster shells along the coast of Maine were characterized by 16S rRNA sequencing and western blot to detect presence of GbpA. Environmental isolates as well as known V. parahaemolyticus, V. alginolyticus, and other Vibrio spp. demonstrated positive GbpA expression. The protein was secreted in a time-dependent manner that was dissimilar from GbpA expression in V. cholerae. Further experiments displayed that this protein interacted specifically with chitin in both environmental isolates as well as in V. cholerae. Additionally an IncA/C plasmid, pSN254, was successfully transferred from Aeromonas salmonicida subspecies salmonicida (AS03), fish pathogen, into V. cholerae. This plasmid also underwent a tandem mating from AS03 to Citrobacter spp. FBT-410 commensal bacterium and then into V. cholerae. These conjugation frequencies were enhanced in the presence of chitin, indicating that the exogenous substrate increases the propensity for V. cholerae to undergo conjugation. These data suggest that HGT contributes to increasing reservoirs of antibiotic resistance plasmids in terrestrial and aquatic ecosystems.

FOOD FOR MOOD: THE ROLE OF DIETARY CHOLINE IN A RAT MODEL OF DEPRESSION

Morganne Kraines ('11) and Nora McCall ('11), Psychology

The present study examined the extent to which the availability of the essential nutrient, choline, during adolescence mediates the effects of chronic stress exposure in male rats. Previous studies have shown that supplemental choline levels during development markedly enhanced hippocampal plasticity and growth factor expression, both characteristically impaired in depression and boosted by antidepressant drugs. Thus, we hypothesized that rats given supplemental choline might be protected against negative behavioral outcomes in the model compared to control rats and choline deficiency might potentiate those outcomes. To test this hypothesis, we

placed 48 male adolescent Sprague-Dawley rats on one of three diets: deficient (0 g/kg choline), control (1.1 g/kg choline), or supplemented (5 g/kg choline). Depressive-like symptoms were induced in half of the rats in each diet group by exposure to 14 days of chronic mild unpredictable stress. Our behavioral assays included the open field to gauge general activity and anxiety and a saccharin preference test to measure anhedonia. Overall, we found that, amongst the control-fed rats, the stress model did not reliably induce the expected effects on our behavioral measures: the stressed rats displayed increased activity and reduced anxiety and the non-stressed rats did not show a preference for the saccharin water (anhedonia), whereas our stressed rats did. Taken together, perhaps these findings may reflect neophobia in our non-stressed rats that was attenuated by the repeated experiences in the stressed rats.

THE EFFECTS OF PERSPECTIVE ON CONCEPTIONS OF PUNISHMENTS AND REWARDS IN PRESCHOOLERS

Morganne Kraines ('11), John DeAscentis ('11) and Devin O'Brien ('12), Psychology

The purpose of this investigation was to explore the effects of perspective on preschoolers' conceptions of fairness of reward and punishment. Participants consisted of 30 male and female preschoolers, aged 3- to 5-years, from the greater Waterville, Maine area. Children listened to 10 stories depicting themes of fair punishment, fair reward, unfair punishment, and unfair reward, in either a self or an other target condition. After hearing each story, participants reported whether they thought the outcome of the story was fair or unfair. Perspective did not have an effect in preschoolers' conceptions of fairness of reward or punishment. However, children consistently viewed reward stories as significantly fairer than punishment stories. Therefore, 3- to 5-year-olds did have some moral understanding of reward as "good" and punishment as "bad." The implications of the results are that perhaps children this young simply could not understand the tasks asked of them, or perhaps they did not understand the overarching concept of fairness.

ARE MEMORIES CONTAGIOUS? THE DIFFERENCES BETWEEN INDIVIDUAL AND COLLABORATIVE RECALL ON MEMORY ACROSS SEMANTIC, PHONOLOGICAL, AND HYBRID ASSOCIATIVE DRM LISTS

Melissa Krause ('12), Evan O'Neill ('12) and Elizabeth Raney ('12), Psychology

A popular paradigm investigating the phenomenon of false memories is known as the DRM (Deese-Roediger-Mcdermott paradigm), where participants are presented with lists of 12 to 15 words that are semantically or phonologically associated with a non-presented word, called a critical lure. Combining semantic and phonological words created a hybrid DRM list that has produced robust effects on false recall in previous studies, yet it has never been studied in combination with a collaborative recall condition, which has also been found to effect false recall. In the current study, semantic, phonological, and hybrid associative lists were manipulated across individual and collaborative recall conditions to examine the accuracy of memory. This study will conclude that collaborative recall produces more true and false memories than individual recall replicating the findings from previous studies. Previous research suggests that both the hybrid and collaborative recall condition, manipulated individually, produce an additive effect for false recall, therefore this study extends those findings, where the hybrid DRM list and collaborative recall condition, together, produce significantly more false memories than any of the other conditions. These findings suggest that memories are collaborative in nature and the convergence of perceptual and conceptual information increases source-monitoring errors, thus increasing false memories.

IS IT A WEDDING OR A FUNERAL? THE EFFECTS OF EMOTION AND FUTURE PLANNING ON MEMORY

Stephanie-Ann LaRose ('12), Psychology

Human beings are highly future-oriented, often imagining situations and planning based on the associated possible outcomes or goals. Neurological evidence has recently shown these future 'simulation' processes by which we plan employ the same pathways as episodic retrieval, by which we remember our autobiographical history (e.g., Szpunar, 2010). Combined with behavioral and self-report data, this overlap in neural activation provides evidence for a future-oriented memory system, in which past experiences are decomposed and reorganized in order to imagine possible future states. Emotion also plays a role in memory performance, such that emotional content can enhance retrieval compared to emotionally neutral material. In order to test the future-oriented memory system hypothesis further, the current research combined future planning with emotional cues, selectively teasing apart the relationship between the two factors. Participants read emotional scenarios involving planning for salient future events, then rated lists of unrelated words for their relevance to the scenarios. If emotion and future planning confer independent advantages to memory, then, compared to when scenarios are emotional and atemporal, the emotion/future planning condition should result in higher recall of the unrelated words.

CLOSE BUT NO CIGAR: ACCESS TO LITERAL AND FIGURATIVE MEANINGS OF IDIOMATIC EXPRESSIONS

Adam LaViolet ('13), Psychology

Previous research on idioms supports the hybrid theory of idiom processing, which states that idioms are processed both as phrases and as lexical units. People process idioms as literal sentences until they have sufficient information to get the figurative meaning. There is limited research on the effect of shared figurative meanings of idioms on memory. The present study explored this issue using a recognition test of idioms with shared figurative meanings. To date, the trend shows that participants were slightly more likely to falsely remember idioms with shared figurative meanings to the studied idioms than idioms with no relation to the studied idioms.

Combined with earlier work showing that shared literal meaning results in higher error rates for non-studied idiomatic expressions, the data suggest that there are multiple pathways through which figurative meanings are accessed.

HUMAN-CARNIVORE CONFLICT IN DEVELOPING COUNTRIES

Hannah Lafleur ('11) and Corey Reichler ('13), Environmental Studies

As human civilization has developed and spread, the number of encounters with large predators has increased proportionally. Conflict takes many forms, including predation of livestock, human injury and death, and transmission of disease. Factors making conflict mitigation particularly challenging in developing countries include institutional instability and unavailability of funds and technology. Additionally, in developing countries deep-seated negative attitudes towards large predators have made lethal mitigation strategies historically prevalent. However, with a deeper understanding of ecology and the implications of extinctions comes a subsequent development of an array of non-lethal mitigation techniques. These techniques can be divided into two major categories: pre-conflict strategies and post-conflict strategies. These strategies can range from physical obstacles such as fences and deterrents to economic plans such as monetary compensation for livestock lost. These strategies have had varying degrees of success across various species and locations. Two particular case studies were investigated, one of the puma (Puma concolor), a predator common in South America, and the other focusing on the wild dog (Lycaon pictus), a native of sub-Saharan Africa. In conclusion, a series of criteria questions are proposed to evaluate the effectiveness of implemented mitigation techniques.

NIGHT ON BALD MOUNTAIN: WHOSE IS IT?

James Lasher ('12), German/Russian

Night on Bald Mountain, one of Mussorgskiâ€™s most famous pieces, stands as a testament to his musical geniusâ€"or does it? Finding the piece incomplete, Rimsky-Korsakov made significant revisions to Mussorgskiâ€™s self-proclaimed â€œwicked prank.â€ Rimsky-Korsakovâ€™s sanitized version to this day remains more popular than the original. This poster explores the formal and stylistic differences between these two very different compositions.

HETEROCYCLIC AMINES AS CARCINOGENS IN COOKED MEAT

Olivia Lattanzi ('11) and Abigail Collett ('11), Environmental Studies

Heterocyclic Amines (HCA) are biproducts produced during the cooking of red meat, chicken and fish at high temperatures. Scientific evidence supports that HCA are known mutagens and probable carcinogens. The exact mechanism by which HCAs are formed is under investigation. HCAs are both metabolized and absorbed during digestion and form DNA adducts, causing mutations. Epidemiological studies of humans show a strong correlation between red meat consumption and increased incidence lung, colorectal, and esophageal cancers. These correlations can be biased by various confounding variables, such as smoking, lifestyle, heredity. In animal models HCAs have been confirmed to cause multisite cancers, demonstrating the great risks of HCA exposure. While consumption of HCA is not preventable, various preventative measures can be taken; pre-microwaving treatments, marinades with anti-oxidants, using slow cooking techniques and avoiding frying, broiling and grilling.

THE EFFECTS OF VARYING STIMULI ON FILIAL IMPRINTING IN DOMESTIC CHICKS (*GALLUS GALLUS*)

Olivia Lattanzi ('11), Biology

Filial imprinting is defined as a rapid form of learning in which a hatchling forms a social preference with the first object it encounters. During this period there are potentially many environmental factors that can influence the strength of imprinting. In this study, I investigated the importance of the social setting as well as movement and sound of the imprint object, on imprinting behavior in domestic chicks (Gallus gallus). Two sets of experiments were conducted, one in which chicks remained in isolation throughout the experiment, and in the other, hatchlings were able to interact with broodmates. Within each experiment, the imprint object, a stuffed hen, moved, made sounds or remained static, and chicks were initially assigned to these treatments at random. I hypothesized that hatchlings that were exposed to a moving and clucking visual stimulus, and allowed to socialize with broodmates, would exhibit strong imprinting behavior. Results suggest that there is significant difference in the strength of imprinting when hatchlings were exposed to variation in the imprinting object. Precocial birds have innate cues that promote imprinting, therefore, a stimulus that is more life-like has demonstrated to elicit a stronger preference. However, data collected does not support that tactile stimulation has an affect on the formation of social preferences.

ATLAS OF MAINE: FOREST AND FRESH WATER HABITAT SUITABILITY OF DOWNEAST MAINE

Larissa Lee ('13), Environmental Studies

This map shows the habitat suitability for the U.S. Fish and Wildlife Service 91 Priority Trust Species of Downeast Maine.

MECHANISM OF FRUCTOSE AS AN OBESOGEN

Larissa Lee ('13) and Virginia Keesler ('13), Environmental Studies

Our poster examines the chemical mechanisms of fructose as an obesogen. We will discuss how alterations in factors such as enzyme activity and gene expression affect lipid metabolism. This is a topic of concern because of the increased consumption of fructose over the last several decades.

SYNTHESIS OF A TETRAAZADIOXACALIX[6]ARENE THROUGH A PENTIMERIC INTERMEDIATE

Lloyd Liang ('13), Chemistry

A pentameric oligomer and a tetraazadioxacalix[6]arene were synthesized using nucleophilic aromatic substitution (SNAr) reactions. The pentimer was synthesized in one-pot using equimolar quantities of diaminobenzene and 1,5-difluoro-2,4-dinitrobenzene to form a single regioisomeric intermediate dimer. Reaction of the formed dimer with 0.5 molar equivalents of 5-methylbenzene-1,3-diol forms the desired pentimer. The purified pentameric oligomer is then reacted with an equimolar amount of 1,5-difluoro-2,4-dinitrobenzene to form a tetraazadioxacalix[6]arene using concepts from previous Katz Research Group projects on the synthesis of mixed N/O systems and the anti-selective synthesis of azacalix[4]arenes.

SYMMETRY AND STABILITY IN NETWORK DYNAMICAL SYSTEMS

Anika Lindemann ('12), Physics and Astronomy

In the study of network dynamical systems, the theorems of linear algebra enable us to connect local structural properties to the dynamical properties of the network as a whole. In particular, for the case of symmetric networks, we can identify structural motifs that confer linear instability to the entire network; addition or removal of other pieces of the network cannot restore stability. For networks with simple edge-weight distributions, these motifs lead to a complete characterization of stability. In this presentation, we will outline these theoretical discoveries and discuss their application to more general networks.

POLITICAL THEMES IN XIX-CENTURY RUSSIAN ART

Nathan Lord ('12), German/Russian

The second half of the nineteenth century in Russia was a time of increasing interest in populism and political radicalism. The Tsarist state, however, censored subversive artistic production. This poster discusses the content and exhibition history of paintings by Ilya Repin depicting subversive leftist activity, and their place in political history.

HUMAN EXPOSURE TO AGENT ORANGE AND RESULTING HEALTH IMPACTS

Keith Love ('13) and Michael Stephens ('13), Environmental Studies

Dioxins, found in Agent Orange, have been documented to have disastrous effects on human health. While dioxins occur usually as unintentional byproducts of some combustion reactions, they are bioaccumulative, persistent endocrine disruptors. When the United States military used Agent Orange during the Vietnam War, dioxins leached into the environment, poisoning residents of the area and military workers. Our study investigates the long-term effects of this exposure and how the dioxins have acted as endocrine disruptors and obesogens.

ALCOHOLISM AND THE FAMILY: WHERE ALCOHOL AND GENDER INTERSECT

Christine Lydon ('11), Sociology

The objective of this project is to explore how children of alcoholics are impacted by their parents drinking, both immediately and longitudinally and finally to study how, if at all, issues of gender and alcoholism intersect. By taking a sociological approach to this research, I was able to identify alcoholism not as a mere personal affliction but rather as a social problem that demands attention from our social policy, especially with regard to child outcomes. I completed six in-depth, semi-structured interviews with adult children of alcoholics - with representation of both maternal and parental alcoholics - and formulated the questions in such a way that potential gender differences between male and female parental alcoholics could be examined. Through a grounded theory approach to data interpretation, the results of my research slowly emerged with the careful coding and analysis of my interview transcripts, ultimately allowing the adult children of alcoholics tell their own powerful stories.

LITERATURE AS A KEY ELEMENT IN SECOND LANGUAGE ACQUISITION

Katherine MacNamee ('14), German/Russian

When we begin learning a language, we are taught the basic syntax and grammar. We are encouraged by our teachers to understand

the language through memorization of abstract rules and these rules are certainly important. What lower level pedagogy lacks, however, is context for the rules it teaches; very few students enter the upper levels with an understanding of the language as it fits into culture. Rarely are students exposed to literature beyond that which their text books supply, and the absence of literature often leaves their curriculum devoid of a genuine voice, that is to say literature written by a native speaker. What this project aims to do is locate and compile German texts, which will then be glossed and edited to fit into the pedagogy of lower level language acquisition and provide German professors with a source of literature that will leave their student with a more thorough understand of their new language and the culture behind it.

SITE FIDELITY IN LIBELLULID DRAGONFLIES ON JOHNSON POND

Andrew Maguire ('11), Biology

Field data which was conducted this summer and fall on Libellulid dragonflies living on Johnson Pond was analyzed for incidence of site fidelity. Data collection included a catch-and-release protocol designed by student researchers in Prof. Herb Wilson's lab this summer as well as extensive habitat and environmental factor data. The results indicated that while site fidelity did not occur at significant rates, additional research suggested that environmental factors may have influenced varied rates of site fidelity. Results, methods, and possible extrinsic factors influencing such described behavior will be discussed. It would be preferential to include this presentation on the date of the other topics associated with the Belgrade Lakes, as the funding was provided by the EPSCoR grant.

BEING EXOTIC: THE STORIES OF FEMALES OF COLOR AT COLBY COLLEGE

Sonia Mahabir ('11), Education and Human Development

As an excerpt from my Senior Scholar's Project, Hail Diversity Hail: Questioning the Campus Climate; this presentation focus on the experience of female of color students by analyzing three stories. The first is on micro-aggressions and homogeneity and explores emotional issues. The second discusses the hookup culture and the idea of being exotic. The final explores academics and how the double oppression effects females. The result of this thesis will be suggestions to help this subgroup of students find their place on campus.

SNAP! HERE IS MY DECISION AND I AM HAPPY: EFFECTS OF THOUGHT SPEED, AND CONSCIOUS THINKING ON ENJOYMENT OF DECISION MAKING, AND POST-CHOICE SATISFACTION

Carolin Maney ('12), Josef Broder ('13), Elizabeth DiMarco ('13) and Lindsay Hylek ('12), Psychology

The study investigated the effects of perceived thought speed (fast or slow) and type of processing (conscious or unconscious) used during decision-making on immediate post-choice satisfaction, regret, enjoyment, and perceived difficulty of the decision making process. Participants were randomly assigned to one of four conditions: fast-conscious condition, fast-unconscious condition, slow-conscious condition, or slow unconscious condition. Participants in all conditions were asked to carefully read the descriptions of four room choices and, depending on the condition, fill out a handout with instructions that manipulated the perceived thought speed. The hypothesis was that there would be an additive effect for the satisfaction and enjoyment induced by unconscious thinking and the positive affect induced by fast thought speed.

THE EFFECTS OF MATERNAL CARE ON NEOPHOBIC TRAITS IN RATS

Alyssa Marquez ('11), Kristen Erickson ('12) and Brittany Hughes ('12), Psychology

The present research examined the effects of maternal care on neophobic personality traits of rats. Parenting style was evaluated on the basis of licking and grooming (LG) and arched-back nursing (ABN) behaviors. To examine the effects, neophobic traits of 42 rat pups were rated based on levels of extroversion and neuroticism exhibited during performance of an exploratory task and reaction to a forced swim test. Subjects' scores on these measures were then separately correlated with parenting style. Based on findings demonstrating that better maternal care results in offspring with lower levels of stress hormones, we predict that high LG-ABN care will be correlated with less neophobic behaviors.

THE EFFECTS OF RNA INTERFERENCE ON TAABF1 AND GAMYB GENE EXPRESSION IN BARLEY ALEURONE CELLS

Sarah Martinez ('11), Biology

Hormones play an important role in the biology of germinating seeds. The phytohormones abscisic acid (ABA) and gibberellin (GA) have opposite effects in imbibing cereal grains. Specifically, GA induces the expression of the Amy32b gene, which encodes an á- amylase, known to mobilize starch reserves into the seed embryo. On the other hand ABA suppresses this induction. Receptors for ABA and GA have been identified to have key roles in several pathways; however, the mechanisms involved in the ABA-GA cross talk are still largely unknown. In order to observe the relationship between ABA and GA, we have focused on the transcription factor TaABF1, a member of the ABA response element-binding factor (ABF) family. Previous work shows that TaABF1 is involved in the ABA-mediated suppression

of GA-induced genes such as Amy32b. This work also suggests that TaABF1 acts upstream of GAMyb, a transcription factor that directly induces Amy32b expression. To further investigate the role of TaABF1 in ABA signaling, we utilized RNA interference to observe the effects of TaABF1 knockdown on downstream events. In preliminary experiments we confirmed that the expression of TaABF1 could be effectively knocked down through the use of an RNAi construct. We then measured the effect of RNAi-mediated TaABF1 knockdown on the expression of GAMyb. Both in the presence of GA alone, and in the presence of GA and ABA, we found that the knockdown of TaABF1 expression resulted in increased GAMyb expression. These findings strongly suggest that TaABF1 is required for suppressing GAMyb expression under normal conditions.

THE EFFECTS OF SELF-AWARENESS ON BEHAVIOR

Michelle Mathai ('12), Jenifer Goldman ('12) and Ryan Trafton ('12), Psychology

Our study investigated the effects of self-awareness of personality on behavior. Participants were randomly assigned to one of two conditions. Those in the experimental condition were primed with a personality survey targeting their level of extraversion. They were then given an open-ended interview to determine, based on the amount of time spent speaking and subjective ratings made by the interviewer, how strongly they exhibited this trait. The control group was given a distraction survey to replicate the experimental procedure, followed by the same interview. Control participants were then given the same extraversion survey to compare with the self-ratings of the experimental group. It was expected that participants who rated themselves as extraverted and were primed with an extraversion survey would speak for more time during the interview than those in the control group. In contrast, it was expected that participants who rated themselves as relatively introverted would speak for less time than those in the control group, which would suggest that awareness of one's own personality traits may affect behavior. Results showed that self-awareness did not affect time spent speaking. However, self-awareness did affect interviewer ratings of the participant's behavior: those in the experimental group were rated by the interviewers as significantly more or less extraverted than the participants in the control group. These findings suggest that time spent talking is not an accurate measure of extraversion, and that self-awareness does have a visible effect on behavior.

SITE FIDELITY BEHAVIOR DISPLAYED BY THE LIBELLUID *SYMPETRUM VICINUM* ON JOHNSON POND

Patrick McBride ('11), Sarah Flanagan ('11) and Andrew Maguire ('11), Biology

Site fidelity, returning to the same geographic location over a certain period of time, is a behavior displayed by many animal genera including dragonflies. In this study we sought to find out if the dragonfly Sympetrum vininum, or commonly known as the Autumn Meadowhawk, displayed site fidelity and if it did over what temporal scale did this behavior occur. The study took place around a small body of water known as Johnson Pond, which is located on the Colby College campus in Waterville Maine. The pond was divided into 12 sites, which we deemed to be large enough to consider oviposition territories. Mark-recapture techniques were used in order to track the movement of the dragonflies. The study occurred in two phases, the first of which took place from August 4, 2020 through August 15th 2010 (the second phase took place from September 20th 2010 through October 20th 2010; however, the data collected during this period was minimal in comparison to the other phase). In the first phase, 221 S. vicinum individuals were captured (205 males; 16 females). 22 of these dragonflies were later recaptured, all of which were male. S. vicinum individuals did not display any degree of site fidelity when we considered individual sites as oviposition territories. However, when we grouped sites 1-3 into a "zone" we found that dragonflies were displaying short-term fidelity behavior to this area. Dragonflies that did not display site fidelity to this zone were captured significantly later than those individuals that did display site fidelity ($p=0.026$).

NUTRITION FOR COGNITION: CHOLINE SUPPLEMENTATION IN MALE RATS INCREASES WORKING MEMORY PERFORMANCE AND ENHANCES GROWTH FACTOR EXPRESSION

Nora McCall ('11), Psychology

In the present study, I placed adult male rats on either a regular diet containing normal amounts of choline or a choline-supplemented diet. I then collected an array of measures to assess spatial working memory, stress reactivity, hippocampal cell survival and neurogenesis, and growth factor levels. My aim was to correlate performance on the working memory test with stress responding, hippocampal plasticity, and the expression of the growth factors BDNF and NGF in the hippocampus and the prefrontal cortex—areas implicated in cognition and stress reactivity and pathology. Choline supplemented rats performed better on the working memory task after a one hour retention delay, had increased prefrontal cortex BDNF, had increased hippocampal NGF, and had a more sustained corticosterone stress response after exposure to an acute stressor. These findings suggest that choline supplementation can increase the neuronal plasticity of adult male rats. Overall, the results of this multi-faceted attempt to integrate behavior, physiology, and neural function are an important contribution to the field of nutrition and neuroscience. While much attention has been paid to the impact of choline levels during development, there is presently a dearth of experimental findings on adult choline supplementation and the ways in which it may affect learning and memory and the brain. The present study aims to address this gap in the literature while also adding to our understanding of the neural and physiological mechanisms mediating and impacting cognition.

THE A-TEAM: ASSESSING THE RELATIONSHIP BETWEEN ATTRACTIVENESS, ALTRUISM, AND (SOCIAL) AGGRESSION

Priscilla McCelvey ('13), Margaret Meyer ('13) and Arvia Sutandi ('13), Psychology

This research examined the interaction between personality and physical attractiveness in the formation of social perception. It also investigated how people make judgments about others based on unrelated cues. Specifically, it examined the inferences concerning altruism and social aggression were made based on physical attractiveness alone, personality information alone, and the two in concurrence. Participants received different stimulus sets containing six descriptors of six fictional target persons: these descriptors were a combination of photographs, personality profiles, and photographs paired with personality profiles. The photographs were of attractive subjects and the profiles will either contain positive or negative information. We saw that, in the condition in which the photograph was paired with a negative social profile, the judgments of social aggression were attenuated by the attractiveness of the photo. We also saw that, on average, people were more likely to infer that the targets were altruistic as opposed to socially aggressive based on physical appearance alone. People also consistently inferred that targets were either altruistic or socially aggressive based on positive or negative profiles alone. This was true even though the profiles made no direct mention of either characteristic. No significant gender differences were observed. These results indicate that based on a few salient traits, people tend to make broad assumptions about a person, even regarding traits unrelated to the available information.

APPLIED CONTEMPORARY DUET CHOREOGRAPHIC STUDY INFLUENCED BY CONTACT IMPROVISATION

Eileen McGuire ('13) and Logan Hunter ('11), Theater and Dance

In this Independent Study we explored the choreographic process and performance of contemporary dance duets. This process involved the challenges of collaboration, problem solving, decision-making, interpretation, and execution of embodied experience. In the first half of the semester we learned "Float," choreographed by Julian Barnett (www.julianbarnett.com), through video observation and Skype conferencing, bringing technology into the learning process. We performed the piece at the New Works Festival in the Department of Theater and Dance earlier this month, and we hope to set up another performance at a local public school. We are devoting the rest of the semester to the exploration of contact improvisation and choreographing an original duet based on our study of that form, such as our attendance at a contact improvisation jam in Portland, Maine. Our new knowledge and understanding of the choreographic process based on the techniques and creative knowledge we gained from working with Julian Barnett and performing "Float" will aid in this portion of our study as well. We have been documenting our progress and self-reflections through a blog, which will inform the Colby community of the challenges and successes involved in creating art.

HEALTHCARE ENTREPRENEURSHIP: OUTSOURCING RADIOLOGY RELATED DIAGNOSTICS IN AN AGING POPULATION

Thomas Meehan ('12) and Elliot Mermel ('12), Science, Technology, and Society

The United States, like many other countries, is undergoing a major demographic shift. It is aging and doing so quite rapidly. The Baby Boomer generation is beginning to reach retirement age, and the number of Americans over age 65 is steadily increasing. A growing constant supply of older individuals will create a high steady demand for products and services in many age-related industries. For a budding entrepreneur, this massive shift in American demographics could be viewed as a business opportunity to capitalize on. More specifically, with advances in teleradiogy (the ability to transfer imaging for analysis via the internet), it is cheaper than ever to open up facilities to perform radiology diagnostics in a country with advantageous wages, and time zones. Especially in the U.S., where shifts in the healthcare system are becoming ever more prevalent with regards to insurance, ways to cut costs like this could be very advantageous.

DIE KATASTROPHE DES DIGITALISIERTEN SELBSTES: KANT, JELINEK UND ADORNO IM ZEITALTER VON FACEBOOK

Ramsey Meigs ('11), German/Russian

As the old saying goes, 'a picture is worth a thousand words'. But can a picture be worth a thousand wrong words? Through works by Adorno and Jelinek, this paper examines the ways in which mass media, and in particular Facebook (to the extent that it can be understood as a platform for broadcasting photographs of ourselves to a wide audience), manipulates imagery to control the information we receive. In her 2003 play Bambiland, Jelinek argues that images in mass media are nothing more than snapshots of reality--fragments of fact--that fail to shed a true, all-encompassing light on the subjects they capture. As a result, these images propagate misinformation to their viewers. Through Bambiland, we can understand mass media as a failure of Kantian enlightenment, or, as a failure of our ability to process information and reason independently. Additionally, Bambiland offers support for Adorno's critique of classical enlightenment philosophy. In his 1969 book Dialectic of Enlightenment, Adorno argues that every major catastrophe in human history has been caused by the human inability to distinguish between subject and object. Photographs and film objectify their subjects, yet we often fail to recognize this when we are watching the news, or browsing through our colleagues' Facebook profiles. Through Adorno, the act of extending our Selves into the digital realm through Facebook could thus be understood as a catastrophe, or, the catastrophe of the digitized Self.

THE DOWNCUTTING HISTORY OF MARTIN STREAM THROUGH PALEO-KENNEBEC RIVER DEPOSITS, HINCKLEY, MAINE, U.S.A.

Ramsey Meigs ('11), Geology

Thick continental glacial ice covered all of modern Maine during the Last Glacial Maximum, roughly 20,000 years ago. When the ice began to retreat 18,000 years ago, isostatic rebound tilted the outflow of Moosehead Lake directly into the headwaters of the Kennebec River. The subsequent increase in upstream Kennebec discharge caused significant erosion of local till and resulted in a large-scale alluviation event between Dodling and Bigelow Hill south of the town of Norridgewock. The resulting Norrdigewock sand plain forced river avulsion over a local drainage divide to the NE, towards what is now the town of Skowhegan. Martin Stream, a north-flowing paleo-tributary of the Kennebec, began flowing down the abandoned Kennebec River valley. At the mouth of Martin Stream, near where it rejoins the modern course of the Kennebec in Hinckley, Maine, remnants of fine sand from this alluviation event can be found in a series of terraces perched above modern stream level. This study examines the heights of these terraces to determine the downcutting history of Martin Stream. It was found that the paleo-Kennebec was between 50 and 150 meters wide as it flowed through the section of valley examined, and that the river's highest floodplain was perched at least nine meters above modern stream level. Eight distinct terrace levels were found, indicating that the stream may have experienced eight periods of quasi-stability since it began downcutting through Kennebec River alluvium. A thin layer of organic sediment, found buried 1.2 meters beneath the top of a 7.2-meter terrace, was deposited in the later stages of the Kennebec River's presence in the valley. Radiocarbon analysis dates these organics at 6050 +/- 40 B.P., indicating that the Kennebec was present here as recently as 6,000 years ago.

SUMMER CAMP AS A RITE OF PASSAGE: AN EXPLICATION OF CAMP AS A TRANSFORMATIVE EXPERIENCE

Deborah Merzbach ('11), Anthropology

Summer camps are often transformative to youth who attend them because camp is a rite of passage. It provides a controlled space that is separate from campers' everyday "home" lives. Camps are created with specific goals about identity and character formation based in a "natural" and prosocial lifestyle. It is the structure and environment of camp that allow for campers to experience personal transformation, since they foster self-discovery, facing challenges (physical and social), and certain kinds of freedoms that do not otherwise exist in campers' "home" lives.

PROFITS OVER PEOPLE: INEQUALITY AND THE AMERICAN DREAM

Zachary Mitchell ('11), Anthropology

The concept of the American dream was first put forth by writer James Adams in 1931, he describes, 'that dream of a land in which life should be better, richer, and fuller for everyone with opportunity for each according to ability or achievement.' Almost a century later the American Dream still remains elusive. This text aims to explore elements of our capitalistic society that profit on inequality and choose profits over people, thus ensuring that the American dream can never be realized. Topics discussed include the commercial bail bond industry, the private prison industry, and predatory lending's affect on rising consumer debt.

HOW CAN WE MAKE AGRICULTURE IN THE UNITED STATES MORE SUSTAINABLE?

Katherine Murray ('12), Jennifer Helm ('11) and Johanna Salay ('12), Environmental Studies

The purpose of this study was to investigate the current state of agriculture in the United States and to develop suggestions for a more sustainable system. This was done by looking at corn in the Midwest, cotton in the Southeast, and strawberries in the Northeast. The variables investigated included pest management, tillage techniques, fertilizer use, crop rotation, and water use. In all three regions, the current farming techniques were not found to be sustainable; however, there are alternatives that can be applied in a economically viable manner.

MECHANISMS OF CYTOTOXICITY OF BIFUNCTIONAL EPOXIDE CROSS-LINKING AGENTS

Christopher Ng ('11), Morgan Lingar ('13) and Vanesa Silvestri ('12), Chemistry

The discovery that bifunctional alkylating agents have antitumor activity led to the development of cancer chemotherapy over 50 years ago. While these compounds form a variety of cellular lesions, DNA interstrand cross-links are believed to be the most lethal, impeding both replication and expression of the genetic material. We are characterizing the mechanisms by which diepoxybutane (DEB) and the structurally related compound epichlorohydrin (ECH) exert their cytotoxic effects in cultured cells. Our first goal is to determine the relationship between interstrand cross-linking and cytotoxicity. We are assaying cross-linking ability in cultured cells using Hoechst 33258 to determine the amount of duplex DNA following alkaline denaturation. Only cross-linked DNA reanneals rapidly and interacts with the dye, which is highly fluorescent when bound to duplex DNA. Preliminary results in chicken 6C2 and human HL-60 cells suggest that DEB is both a more effective cross-linker and has a lower LD50 value than ECH. Our second goal is to characterize the pathways by which these compounds induce apoptosis. Reverse-transcriptase real-time PCR analysis of HL-60 cells treated with DEB and ECH under conditions determined to induce apoptosis suggests up-regulation of several key genes involved in the mitochondrial apoptotic pathway, including BAK1, BAX, DIABLO, PUMA and APAF1. Finally, we are identifying the covalent structure of the ECH-cross-linked lesion via electrospray LC/MS. Characterization of the DNA modifications induced by these agents is an important step in understanding how these compounds exert their cytotoxic effects.

KIYOHIME TRANSFORMING INTO A SERPENT

Hoai Nguyen ('12), Art

The woodblock print "Kiyohime transforming into a serpent", created by Utagawa Kuniyoshi (ca. 1797 - April 14, 1861), does not only exemplify Ukiyo-e (literally 'pictures of the floating world), a genre popular in Japan, but also demonstrates the kind of special visual effects used in kabuki, a major form of Japanese theatrical drama. The print combines both aesthetics and storytelling to create an intriguing result that is both dynamic and harmonious. This print belongs to the Ukiyo-e genre, which was the most popular artistic genre of woodblock painting in Japan. As Ukiyo-e prints were mass-produced, almost everyone could afford them, especially townsmen who favored them above all. Later during the Meiji Restoration, the transportation between Japan and the West would make those prints a source of inspirations for Impressionists and Post-Impressionists such as Van Gogh, Gauguin, Monet, and Toulouse-Lautrec. The subjects of Ukiyo-e pertain to the concept of transient beauty, glamour, and pleasures for the middle-class urban residents of the Edo period. Kabuki by its theatrical nature provides momentary entertainment detached from the everyday mundane world, hence becomes a popular subject for Ukiyo-e masters. As kabuki plays and kabuki actors became household names, the prints both fostered and benefited from their popularity. The print "Kiyohime Transformed into a Serpent" by Utagawa Kuniyoshi is an excellent example of Japanese art blended with popular culture. Not only that, it also shows the talent of an outstanding Ukiyo-e artist in depicting another art form – the Kabuki theatre.

NATIONAL MYTHS, LOCAL LEGACIES, AND PERSONAL STORIES: JAPAN'S CONFLICTING WAR MEMORIES

Kristin Nissen ('11), History

For the 2011 January term, I designed and completed a research project exploring how survivor testimony and sites dedicated to the memory of World War Two (monuments, memorials, and museums) in Japan contribute to and complicate the Japanese memory culture. Each approach unveiled another layer to Japanese war memory, providing a unique look at postwar Japan's social politics, international image, and internal divisions. The goal of this project was not only to visit these sites, but also to understand how the Japanese interpret them. Why is a collective Japanese historical memory so difficult to trace? Where do the Japanese stand? Is World War Two memory culturally and politically significant in Japan? World War Two commemorative sites in Japan carry different messages, meaning that a collective consensus is nonexistent and that the national stance on war memory is either contested or ignored at local and individual levels. This presentation will summarize how and why these memories and their representation conflict with one another. These contradictions reveal less about the historical events themselves than they do about the absorption of the past in the present.

THE VEL' D'HIV' MONUMENT IN PARIS: A SITE OF POLITICAL MEMORY

Kristin Nissen ('11), Art

This presentation will summarize the conclusions of a research project completed in the fall semester for a seminar entitled Culture and Memory: Monuments and Memorials. In the aftermath of World War Two, France and her leaders grappled with the dark years of German occupation and French complicity in the deportations of Jews. In the summer of 1942, Parisian gendarmes rounded up more than 13,000 French men, women, and children and crowded them into the Vélodrome d'Hiver (Indoor cycling stadium, known as the "Vel' d'Hiv'") from where they were deported to Auschwitz. This paper looks at how French citizens and politicians, primarily in the 1990s, came to terms with their country's historic and active role in the Final Solution. Through an observation of commemorative traditions and evolutions in France, this paper analyzes how the cultural divisions and political climate in the postwar decades improvised to form a collective memory of the past, establishing a monument at the former site of the Vel' d'Hiv' along the way.

LEARNING AND PLAYING AT THE AMA GHAR HOME IN KATHMANDU, NEPAL

Michael Noll ('11), Religious Studies

As a recipient of a 2011 L. Sandy Maisel Fellowship, I traveled to Kathmandu, Nepal this January to teach, tutor and play with the children of Ama Gha, meaning 'motherly home' in Nepali. The Ama Foundation's mission is to provide a long-term home environment for these children and to provide education, health care and support. The staff of Ama Ghar take on roles as true parents and care for more than 40 children, many of whom were orphaned or displaced by the country's decade long civil war. The schools that the children attend are, in general, very poorly funded and taught using outdated and often seriously compromised teaching materials. This presentation will cover the wonderful times I had playing, working, and learning with the kids of Ama Ghar, as well as the challenges and successes I encountered in facing Nepal's educational system.

MODELING PARADOXICAL MOTION PERCEPTION BY VESTIBULAR PATIENTS

Roja Nunna ('11) and Alyssa Bellsle ('11), Mathematics

The vestibular system and the brain work together to perceive human body movement. In vestibular patients, there is vast discrepancy

between subject's perceived self- motion and the physically proven motion. In our research, our aim is to model such observations using mathematical modeling and animations. Spinning subjects in a centrifuge is one way to test differences between perceived versus actual motion. Subjects experience yaw, pitch, and roll motions. In our research, we model these perceptions during acceleration and deceleration in a centrifuge. Additionally, being able to rotate a vector in space about a given direction is a useful tool for motion manipulation. Once such is available we can model paradoxical motions by having two coordinate axes: Earth's and the subject's head.

EVALUATING THE GROWTH, PRODUCTION AND SOIL MICROBIOTA OF A NOVEL ORGANIC HYDROPONIC SYSTEM FOR GREENHOUSE TOMATOES

Benjamin Oakes ('11), Biology

Two tomato production systems, an organic soil control and an experimental organic hydroponic system, were arranged in a controlled greenhouse environment for a side by side comparison of growth, fruit production and total rhizosphere microflora. The organic hydroponic system was specifically designed with the intention of creating a favorable environment for rhizosphere microorganisms, especially PGPR (Plant Growth Promoting Rhizobacteria). The results indicate that the experimental organic hydroponic system did in fact support a larger resident population of microorganisms, especially PGRP species in the root-zone. Moreover, the organic hydroponic system outperformed the soil system in vertical growth per week, nodes added per week and mass of individual fruit at harvest.

FALLING: AN EXPLORATION OF HEIGHT, WEIGHT, SPACE, AND GRAVITY THROUGH AERIAL DANCE

Katelyn Ouimet ('11), Theater-and Dance

Falling is the title of my original aerial dance piece which entirely takes place suspended on a rope ladder. It is a dance about questioning choice and transforming experience; it is about engagement and liminality. Falling explores the space in between control and chaos. In familiar pairing, we often use the phrase "free fall." Is there freedom in falling? ... I first choreographed and presented Falling as the culmination of my JanPlan independent study project in aerial dance. I continued to workshop the piece throughout the spring semester and it will be presented as part of the New Works Festival in Strider Theater, April 15-17. The rope ladder is a unique aerial apparatus that was conceived and created for this piece. Throughout my project I have engaged in many questions through kinesthetic experimentation. How can an apparatus limit and liberate a moving body? How are weight and space transformed by additional height and subtracted ground? How can an object of utility become a tool for artistry, a playground for dance and dialogue? How can movement convey narratives and complex ideas, and moreover how can other theatrical elements such as lighting and costume contribute to these goals?

ATLAS OF MAINE: TRANSPORTATION IN DOWNEAST MAINE

Theodore Papademetriou ('11), Environmental Studies

The Downeast region of Maine is a sparsely populated region yet has various networks for transportation. This map includes roads (including type), railroads, and airport. In addition this map displays elevation and locations of lakes in order to better understand placement of these various transportation networks. Road, railroad, airport, and elevation data collected from the Maine Office of GIS. States border and hillshade obtained from ESRI. Projected in NATD83 UTM Zone 19N

SPATIAL ANALYSIS OF CARDIOVASCULAR DISEASE INCIDENCE AND POTENTIAL ENVIRONMENTAL FACTORS IN THE CALIFORNIA BAY AREA

Nicholas Papanastassiou ('13) and Sarah Holmes ('13), Environmental Studies

This project investigates proposed environmental factors that contribute to heart disease. This is based on several scientific articles that have hypothesized positive correlations between areas of increased air and noise pollution and dioxin emissions with heart disease incidence. We examined the Bay Area of California, which consists of nine counties.

COMMUNITY PARTICIPATION IN LAKE STEWARDSHIP: AN ANALYSIS OF THE ATTITUDES, VALUES, AND KNOWLEDGE OF LAKEFRONT PROPERTY OWNERS IN THE BELGRADE LAKES REGION OJF MAINE

Brynna Patel ('11), Environmental Studies

This project is the analysis of a survey given to lakefront property owners in the Belgrade Lakes region of Maine. The survey looked to determine factors that result in engagement in lake stewardship in the area. The variables tested were: general demographic variables, whether the individual lived on the lake seasonally or permanently, their level of environmental knowlegde, their broader attitudes about the current relationship humanity has with the environment, and the extent to which they felt empowered and able to improve the health of the lake.

COMMUNITY PARTICIPATION IN RIVER AND STREAM REHABILITATION, PUNE, INDIA

Brynna Patel ('11), International Studies

This project was undertaken during JanPlan of 2011. Work was done with various citizen groups in the city of Pune, India who work to clean the rivers and streams. The research looked to understand why people participate in the project. This was done through extensive interviews of participants as well as learning about how new members are recruited and awareness is spread.

COMPARING MIDDLE PERMIAN AND EARLY TRIASSIC ENVIRONMENTS: MUD AGGREGATES AS A PROXY FOR CLIMATE CHANGE IN THE KAROO BASIN, SOUTH AFRICA

Bryce Pludow |'11), Geology

The Permian-Triassic Boundary (252.6 Ma) is a period under intense study as it represents the greatest loss of life in Earth history. Although the event is well understood and constrained in the marine realm, questions remain about extinction, climate, and environmental conditions on land. The Karoo Basin of South Africa is a foci of study due to the completion of its terrestrial record, specifically across this boundary. The identification of pedogenic mud aggregates indicates the presence of soils with abundant clays in a seasonally arid environment. The identification of these aggregates in low-sinuosity Early Triassic samples but not in high-sinuosity Middle Permian samples upholds the hypothesis of increasing aridity after the extinction event. Additionally, the identification of two generations of aggregates in Early Triassic channel deposits and only one in paleosol deposits indicates the removal of earlier generations of paleosols from the landscape.

ANALYZING THE HIDDEN CURRICULUM AND HOW IT CORRESPONDS WITH THE PREDOMINANT SOCIAL CLASS OF THE STUDENTS

M. Quinn ('11), Education and Human Development

Since Jean Anyon's 1981 case study, there has been little change within the education system. Thirty years later, schools continue to play a large role in reproducing social classes and preparing students for the social divisions of labor they will most likely enter. In this thesis, I focus on two schools in contrasting social class environments and the ways in which the curriculums in both contexts correspond with the predominant social class of the student bodies. I explore why, even with the many major changes that have occurred since 1981, our school systems continue to widen the achievement gap among students by perpetuating social stratification. To explore the connections among education, the hidden curriculum, and social class, I observed two kindergarten classrooms in different schools. Through observation, I was able to witness what teachers do with their students each day, the types of assignments given, and how the students react toward the daily work. I also interviewed the two kindergarten teachers at each school as well as one administrator at each school. My data revealed that disadvantaged students learn material and facts by rote in an effort to prepare them for jobs that require basic memorization. Privileged students are educated creatively and learn through their experiences so they will be trained for future high-powered jobs such as doctors and lawyers. The only way to move away from this form of education is to break the silence and surface the meaning of the hidden curriculum. Through addressing these inequalities within education and acknowledging the use of a hidden curriculum, it is the hope that schools will offer more equal opportunities to students of all social classes.

ATLAS OF MAINE: LOCATIONS OF SCHOOLS IN DOWNEAST MAINE

Catherine Raker ('13), Environmental Studies

Atlas of Maine: Locations of Schools in Downeast Maine: Washington and Hancock counties in Maine contain a variety of education institutions. This map shows locations of secondary educational facilities, and post secondary educational facilities. It also shows township boundaries and major highways. Created by Cassie Raker ('13) School locations, highways, and country border data were collected from the Maine Office of GIS. Township boundaries were obtained from ESRI.

CLIMATE CHANGE AND THE GREAT BARRIER REEF

Catherine Raker ('13) and Zakary Jaques ('13), Environmental Studies

The Great Barrier Reef is one of the most biodiverse ecosystems in the world, with all species involved affected either directly or indirectly by the health of the coral. In recent years, climate change has increased the threat of coral bleaching to this environment. The most significant aspects affecting the reefs are temperature change, ocean acidification, nutrient levels, and light levels. Current management has focused on general strategies (such as carbon emission reduction, general awareness of bleaching, and fortifying against GBR related economic loss) derived from qualitative research done in the Great Barrier Reef. However, given the unique challenges faced by different sections of the reef, we believe that region specific, quantitative action needs to be taken. This may include strict anchoring laws, catch regulations, and regulation of coastal development.

INVESTIGATION OF D-PAX2 FUNCTION IN *DROSOPHILA* BRISTLE DEVELOPMENT BY RNAI KNOCKDOWN

Christine Reynolds ('12), Biology

The external mechanosensory organs (bristles) of the adult *Drosophila* peripheral nervous system cover a substantial portion of the body surface. Bristle development is dependent upon the transcription factor D-Pax2, which is expressed early in all bristle cells as cell fates are specified and late in the shaft and sheath cells as they differentiate. Although the role of D-Pax2 in the differentiation of the shaft and sheath cells has been established, mutant analysis has shed little light on its early role. To determine the function of D-Pax2 during the cell fate decisions in the lineage, we are using the GAL4-UAS system to express a D-Pax2 RNAi construct at specific time points during bristle development. To date, we have demonstrated that D-Pax2 knockdown experiments can generate a phenocopy of D-Pax2 mutants. We have begun to determine the effect of the timing of D-Pax2 RNAi by using a hs-GAL4 x UAS-D-Pax2 RNAi cross and heat shocking pupa from this cross at specific time points during the development of the bristle. Preliminary results show that knockdown of D-Pax2 early during bristle development (when bristle cells are dividing and undergoing cell fate specification) can dramatically disrupt bristle development. We are currently examining the underlying basis of these bristle defects.

THE BEER DRINKER'S DILEMMA: THE QUEST FOR AN ENVIRONMENTALLY-FRIENDLY BEER

Amanda Reynolds ('12), History

People across the world have brewed beer for thousands of years. It has become a commodity to some and an art form to others. Beer is one of the most popular beverages in the world, falling behind only water and tea. Modern breweries are located in most countries throughout the world, 1,600 of them residing in the United States. These breweries produce a myriad of types of beers, catering to an immense range of palettes, income levels, and personal styles. Though there are many choices in the grocery store, some who have caught the brew fever choose to brew their own, adding a personal touch to every bottle or cask from the home. Many small breweries producing craft beers often started out in a dank cellar and grew to the size which they could produce for their local or regional communities. They bring passion and innovation from the basement to the brewery, and this passion is manifested in the beer they produce, not to mention the beer simply tastes better than the mass-marketed, mass-produced beverages the mega-corporation competition makes. Microbreweries are better for the environment because they are responsible businesses and foster a local community ethic. The environmental movement has spurred companies to become aware of, and help mitigate, environmental change and degradation. Microbreweries depend on a community consumer base and focus more on local issues than large, often multi-national brewing conglomerates.

THE RENOVATION OF ELLIS ISLAND: A MODERN PILGRIMAGE

Samantha Richens ('11), Art

During the 1880 – 1924 immigration wave, over twelve million people passed through Ellis Island as their port of entry into the United States. Since Ellis Island was abandoned in 1954, the shift in American ideology created a greater awareness of immigrant culture. As Americans began to identify as an immigrant nation, they constructed the archetypal immigrant experience, that of refugee from Southern or Eastern Europe in the first two decades of the 20th century. This paradigm, derived from a variety of contemporary and historical sources, clearly determined the 1989 restoration of Ellis Island. The 1990 reopening of the landmark, in New York and New Jersey, created a symbol of the national collective memory for modern visitors, and a physical landmark upon which they can project the idea of the United States as an immigrant nation. Visitors travel to Ellis Island as modern day pilgrims in order to connect with this social memory and thus undergo a ritual experience that connects them with an idealized past for them and their family. Furthermore, the decades prior to the restoration brought the importance of historic preservation into public consciousness. The restoration of Ellis Island illustrates the issues at stake in the preservation of a national monument. Specifically, as Ellis Island now houses the national immigration museum, the 1989 restoration needed to delicately balance historical integrity and modern functionality. The issues of American identity as an immigrant nation and historic preservation both greatly impacted how the modern tourist will experience Ellis Island.

ARE PHTHALATES A HUMAN OBESOGEN? AN EXAMINATION OF EPIDEMIOLOGICAL STUDIES SUGGESTING THE LINK BETWEEN PHTHALATE EXPOSURE AND OBESITY

Cordelia Roberts ('13) and Kathryn Lee ('13), Environmental Studies

Phthalates are a family of chemicals that are used as plasticizers in a wide range of consumer products, including building materials, personal care products, cosmetics, paints, cleaning materials, and food packaging. Phthalate exposure to humans is widespread. It has been found that 75% of the U.S. population carries detectable levels of phthalate metabolites. In this study, we seek to determine whether or not phthalate exposure can be linked to obesity, a global health epidemic. To determine if phthalates are obesogens, we examined several epidemiological studies already conducted. Studies analyzed include the effect of phthalates on thyroid development in children, the link between phthalates and insulin resistance and metabolic disease in US men, and the prevalence of phthalate metabolite levels in foods.

HASTENING THE WHEELS OF CHANGE: INTERNATIONAL COLD WAR PRESSURE AND CIVIL RIGHTS REFORM DURING THE TRUMAN

PRESIDENCY

Caley Robertson ('11), History

In the early Cold War arena, international pressure on the United States to live according to its ideological rhetoric enabled the Truman Administration to set a precedent for federal engagement in domestic civil rights reform. As the United States led the march to institutionalise human rights as the standard of moral legitimacy in the global arena, the country's grisly record of racial oppression and violence invited foreign and domestic criticism alike. This paper intends to prove five discrete points. First: Cold War tensions brought questions of moral legitimacy to the forefront of the U.S. national agenda. Second: during the Truman presidency, the country's ability to export democracy came to depend largely on its human rights record. Third: due to their belief in the principles of freedom and equality, President Harry S. Truman and his advisors at least tacitly supported legal and economic desegregation (though perhaps not social.) Fourth: foreign pressure on the United States to live according to its ideological rhetoric gave the Truman Administration the incentive to take action on an issue they were already rhetorically committed to. Finally, I argue that although most of the steps taken towards civil rights during the Truman presidency were more symbolic than substantive, the administration set a precedent for federal engagement with race discrimination that would continue throughout the twentieth century, and ultimately destroy the Jim Crow legal system and other institutions of racial oppression.

THE OBESOGENIC IMPACTS OF FRUCTOSE-SWEETENED BEVERAGES CONSUMED BY CHILDREN

Kelly Roche ('11), Matthew Cheever ('12) and Yiyuan Qin ('12), Environmental Studies

Studies have shown that there is a correlation between the obesity epidemic and the increasing consumption of beverages containing fructose. In children, the consumption of fructose via beverages can increase concentrations of triglycerol, decrease LDL particle size, and increase BMI and WHR. Consumption of fructose results in lower concentrations of insulin, leptin, and glucose than other types of sweetened beverages. When fructose enters the body via beverages it acts as a discretionary energy source, meaning that the body does not fully recognize it as viable energy. These conditions are all associated with obesity. Consumption of juice, soda, and flavored sports drinks is becoming more prevalent than consumption of milk in schoolchildren. Correlations have been observed between consumption of these fructose-containing beverages and lifestyle choices, which include poorer dietary routines and reduced exercise. Given these findings, we recommend regulation of the access of children to fructose-sweetened beverages and increased education concerning healthy nutrition and lifestyle choices for children.

STATE LEADERSHIP FOR SAFER CHEMICALS POLICY REFORM: LESSONS FROM CALIFORNIA, MAINE, MINNESOTA AND WASHINGTON.

Michelle Russell ('11), Environmental Studies

Chemicals regulation under the U.S. Toxic Substances Control Act of 1976 overwhelmingly fails to protect human health. In the absence of federal protection, my honors thesis examines how safer chemicals legislation and implementation is moving forward in four states: Maine, Minnesota, California and Washington. Working in response to a loud public cry of concern and persistent grassroots organizing, these four states have enacted laws that allow for the regulation of chemicals in consumer products. Three states chose to focus on regulating the chemicals used in children's products, taking into consideration greater vulnerability in early development and the compelling public priority to protect children's health. For each state, I studied the statutes and interviewed key personnel at the state agencies responsible for the implementation the law. I summarized the policy-making and implementation process for each state. While synthesizing the data, I developed a set of common factors that made it possible for these states to emerge as leaders for chemical policy reform. The most important factors include: the presence of an active environmental health advocacy group to spread awareness about the need for policy to protect human health; a supportive state legislature; an understanding of state-specific economic costs of inaction; stakeholder participation; and interstate information-sharing and communication about the regulatory process.

EFFECTS OF THEORY OF MIND ON THE MISINFORMATION PARADIGM

Arielle Saporta ('11) and Claire Grady ('12), Psychology

The purpose of the current study was to examine how theory of mind (ToM) and suggestibility influenced recall in preschool-aged children. Participants were placed in a condition that addressed misinformation (control, misinformation) and tested into conditions regarding a ToM task (pass, fail). Participants watched a Sesame Street video clip, followed by a misinformation manipulation in the form of a synopsis relaying false information about the video clip (or a control one that reiterated the information). Subsequently, participants performed a knowledge access task (Karpinski & Scullin, 2009), followed by cued recall. Participants of age 4.5 consistently passed the knowledge access task, thereby demonstrating an understanding of ToM, while younger participants did not. The misinformation manipulation did not appear to have a significant effect on cued recall.

IMPLICATIONS OF ADOLESCENT CHOLINE SUPPLEMENTATION AND GESTATIONAL STRESS ON DEPRESSION

Arielle Saporta ('11) and Samantha Gillies ('11), Psychology

This work explores the efficacy of the dietary supplementation of a nutrient, choline, on combating against the effects of depression in a rat model. Subjects also underwent stress in order to test the ways in which stress affected susceptibility to depression. Results showed that those who received choline were less anxious and underwent increased neurogenesis.

ATLAS OF MAINE: CELL PHONE TOWERS AND POPULATION DENSITY IN THE DOWNEAST MAINE

Sophie Sarkar ('11), Environmental Studies

Atlas of Maine: Cell Phone Towers and Population Density in Downeast Maine: This map shows population density and cell phone tower locations in the Downeast Region of Maine. Created by Sophie Sarkar ('11). Data Sources: Block-group Population data from the 2000 US Census. Cellphone Tower locations from Maine Office of GIS. Hillshade, Downeast, DowneastClip, and Canada border from ESRI. Projected in NAD83 UTM Zone 19N.

THE EFFECTS OF CELL PHONE RADIATION ON MALE FERTILITY AND THE BRAIN

Sophie Sarkar ('11) and Tamer Hassan ('11), Environmental Studies

Epidemiological studies on the effects of radiofrequency electromagnetic radiation on neurological functioning show that residents living near cell phone base stations have higher occurrences of several neurological disorders. There is evidence to indicate that personal cell phone use may contribute to similar disorders, especially short term effects on brain restfulness. Radiation has also shown to effect male reproductive organs and semen, with several studies indicating decreases in sperm motility and vitality from radiation exposure.

PURPOSE FOUND: CONDITIONS OF MEANINGFUL EXISTENCE, SELFHOOD AND THE ROLE OF THE OTHER IN JOHN MILTON'S PARADISE LOST

Anna Sawch ('11), English

This paper examines the role of the other on selfhood in John Milton's Paradise Lost. Over the course of the epic, Adam and Eve, the central figures, develop and evolve, learning and discovering who they are as selves through the lens of one another. Initially, God makes Adam and Eve in his image, with "he for God only, she for God in him," positing Adam as His substitute on Earth and as superior to his female counterpart, Eve. However, as the two interface with one another through speech, perception, and desire, their emergent dynamic becomes a more powerful influence on who they are than their Divine parentage. In essence, humanity becomes inclined to itself above all, and in this realization, Adam and Eve come to understand the subjective nature of death and solitude. While they lament their fall and disobedience to God, they realize that in knowing true ill and facing the haunting limits of mortality, their own lives are made more valuable. For Adam and Eve, to die is to be without the other, and in this recognition, Adam and Eve illuminate the inherent dependence of the self's "I" on the polarity of the other's "you". In the end, Adam and Eve are not only dependent on one another, but are inclined to one another in a way that is more deeply and poignantly influential than their original Maker, suggesting that for true selves, it is love, not Eden, that constitutes true paradise.

IDENTIFICATION OF PARATHYROID-RELATED PROTEIN GENE (PTHRP) IN EASTERN BROOK TROUT (*SALVELINUS FONTINALIS*) AS A NON-REGULATORY FACTOR IN THE RESPONSE TO NUTRITIONAL HYPERPARATHYROIDISM

Erin Schnettler ('11), Biology

The results of the present study suggest that nutritional hyperparathyroidism is caused by low levels of dissolved ambient calcium (Ca2+) in acidic aquatic habitats of eastern brook trout (*Salvelinus fontinalis*). Parathyroid-related protein gene, PTHrP, a known hypercalcemic factor in fish, was identified as a promising candidate to investigate the physiological basis of this disease. A partial brook trout PTHrP sequence was identified using multiple alignment sequencing software and found to be 245 bp in length and was closest in shared identity to PTHrP sequenced from sea bream (*Sparus auratus*) and European flounder (*Platichthys flesus*). PTHrP mRNA levels were examined in the gill, intestine, kidney, skin and brain tissues to localize gene expression. In order to measure whether PTHrP gene expression is influenced by low Ca2+ conditions, an experimental group of brook trout specimens were subjected to 48 hours of acclimation to low calcium conditions (<2.5mg/L) before sampling. PTHrP expression levels were found to be the highest in the intestine. All other tissue samples exhibited extremely small to zero PTHrP gene expression levels. There was not found to be a statistically significant difference in PTHrP gene expression between low and standard (40 mg/L) calcium conditions, suggesting that other genetic regulatory mechanisms are responsible for the clinical manifestation of nutritional hyperparathyroidism.

SUSTAINABLE SOLUTIONS TO CLIMATE CHANGE THROUGH PUBLIC ACTION: AN ETHNOGRAPHIC CASE STUDY OF BICYCLE USE IN COPENHAGEN, DENMARK

Danielle Sheppard ('11), Science, Technology, and Society

This January I traveled to Copenhagen, Denmark for three weeks on a generous grant for student research from the Goldfarb Center. In

conjunction with a year-long senior research project comparing the efficacy of climate policy between Denmark and the United States, the trip allowed me to actively engage with my two majors – Anthropology and Science, Technology, and Society – through independent fieldwork abroad. While in Copenhagen, I explored the infrastructure and culture that facilitate bicycling. I worked with professors and PhD students at the University of Copenhagen, conducted interviews with individuals at the City Bike Program and the Metro, and experienced urban bicycling first hand. Through these interactions and my stay with a host family, I learned that Copenhagen bicycling culture exists because top-down government policies make it economically disadvantageous to travel by most alternative means of transportation. It is therefore not local or social agency alone that encourages sustainability, but the combination of pervasive social attitudes with effective national policy.

TRIBUTYLTIN EXPOSURE IS LINKED TO OBESITY

Matthew Silverman ('12) and Bjorn Knutson ('13), Environmental Studies

Tributyltin (TBT) falls within a class of chemical compounds called organotins. These compounds are primarily used in industry as preservatives and protective agents. TBT specifically, is used as a fungicide, as an anti-biofouling coating on waterbased structures and boats, and as a wood preservative. Some of the routes of exposure to humans are the intake of contaminated seafood, workplace exposures, and many other environmental exposures. Research has shown that TBT has a positive correlation with weight gain. Studies have also shown that TBT can lead to the formation of adipocytes, by influencing the peroxisome proliferator-activated receptor (PPAR). Similarly, TBT was found to promote the accumulation of cortisol as it limits insulin and leptin signaling. In addition, studies have also shown that TBT activates brain regions that control food intake and disrupts their normal functioning. From these studies, TBT can be classified as an obesogen, which is a compound that causes obesity.

HOT OR SWEATY?

Julia Simons ('13), Samuel Helm ('12), Kenneth Peterson ('12) and Cale Wardell ('13), Psychology

What can we tell about a person from just looking at their face? A significant amount of research has been dedicated to the connection between physical attractiveness and a resulting halo effect for positive personality traits. No study has directly examined a halo effect for perceived athleticism: The present study addresses potential halo effects for athleticism in addition to attractiveness. Physical appearance and perceived athleticism served as our independent variables. We hypothesized that these two variables would show a halo effect on our dependent variables: personality and extrinsic career success. We introduced 45 male and female subjects to equal numbers of same sex stimuli in various conditions of attractiveness and athleticism and then asked them to rate subjects on extraversion, agreeableness, and extrinsic career success estimates (fiscal success). From the results of the data, there is evidence that athleticism and attractiveness often have a cumulative effect on personality judgments and projected success, along with significant interactions between attractiveness and sex of stimuli along with athleticism and sex of stimuli. Contrary to our hypothesis we find little evidence that athleticism alone influences personality judgments and projected career success.

ATLAS OF MAINE: CONSERVATION LANDS OF DOWNEAST MAINE

Peter Smithy ('12), Environmental Studies

Conservation lands of Downeast Maine: Downeast Maine contains a variety of different types of conservation lands, with different ownership, size, and proximity to population centers. The map displays elevation data for the Downeast Region as a hillshade. Created by Peter Smithy ('12). Lake, Road, and Conservation Land Data from the Maine Office of GIS.Projected in NAD83 UTM Zone 19N.

SUCCESSFUL INTELLIGENCE AND COLBY'S CURRICULUM

Alexandra Solsvig ('11), Education and Human Development

Robert Sternberg has theorized that human intelligence is comprised of three parts: analytical intelligence, creative intelligence, and practical intelligence. These three entities become apparent through problem solving and otherwise mitigating daily life. Analytical intelligence reflects one's ability to identify and define a problem, without which one cannot possibly go about generating solutions. Creative intelligence measures one's ability to invent solutions that are original and take into account multiple aspect of a problem. One's knack for thinking of new questions and new directions to take a study or investigation is a hallmark of creativity. Practical intelligence refers to one's capacity to understand how a solution in place may need modification according to changing circumstances. Those with a good deal of practical intelligence are highly adaptable as a result. Education tends to focus on identification and definition of 'well-structured' problems, i.e. problems that are visible and easily discerned. In life, however, one tends to encounter 'well-structured' problems, or problems that are multifaceted and not easily recognized, resolved, or mitigated. While it is imperative that one adequately identify and define a problem before solving it, the creative and practical aspects of problem solving may or may not be well addressed in an academic setting. To determine how well Colby's curriculum incorporates the dynamic aspects of problem solving, this study explores how often students' opinions concerning whether they are given opportunities to generate new ideas and independent work in their respective fields of study in respect of problems or questions that are not 'well-structured'.

ARSENIC IN CHICKEN FEED: A THREAT TO HUMAN HEALTH

Sarah Sorenson ('11) and Emily VanWyk ('11), Environmental Studies

Since 1944, U.S. poultry farmers have been using an arsenic-based drug called roxarsone as a additive in chicken feed to control the common disease, coccidiosis in chickens. Soon after its approval for use by the Food and Drug Administration (FDA), farmers found that the drug also promoted growth, increased deed efficiency, and improved flesh pigmentation. These bonuses led farmers to increase their use of roxarsone and between 1995 and 2000 more than 70 percent of broiler chickens were exposed to this approved drug. However, arsenic, the main component of roxarsone, is a known poison and poses problems to human health as the environment. Arsenic has been linked to an increased risk of cancer, cardiovascular disease, diabetes, and other health problems. Additionally, this arsenic-based drug is excreted in chicken waste and later used as fertilizer, leading to contaminated water, soil, and crops. With the rising U.S. consumption of poultry meat, from less than 20 pounds in 1940 to nearly 60 pounds in 2008, there is concern that humans are exposing themselves to higher levels of arsenic. Higher chicken production also leads to higher levels of manure, which places a heavier burden on the environment in terms of arsenic contamination. Despite these growing trends, the EPA, FDA, and USDA have yet to make revisions to the allowed level of arsenic residues in poultry since 1951. This lack of revision is posing a serious threat to human health and the environment.

FAILING MARX: LOCATING CLASS ISSUES AND THE POTENTIAL FOR TRANSGRESSIVE PEDAGOGY IN ZORA NEALE HURSTON'S THEIR EYES WERE WATCHING GOD AND HARPER LEE'S TO KILL A MOCKINGBIRD

Aleah Starr ('11), English

According to educational scholar bell hooks, "nowhere is there a more intense silence about the reality of class differences than in educational settings" (hooks 177). With hook's assertion in mind, I preformed Marxian analyses of Zora Neale Hurston's Their Eyes Were Watching God and Harper Lee's To Kill a Mockingbird in order to determine the presence of class commentary in two novels traditionally used to teach high school students about race. After reading the novels with my own class-conscious lens, I visited a semi-private and a public high school in an attempt to see whether high school students would be to able to identify the same class commentary I had uncovered in my own reading. In this Honors Thesis, I present my own analyses of the novels as well as those of the students and teachers at the two different high schools. My findings represent an exploration of literature's role in social-justice-oriented pedagogy.

THE EFFECT OF OPSONIZATION ON PHAGOCYTOSIS OF BACTERIA BY ZEBRAFISH KIDNEY NEUTROPHILS

Alexander Storer ('12), Biology

Phagocytosis is an important mechanism by which cells of the immune system can engulf and dispose of pathogens, such as bacteria. Opsonins, such as secreted antibodies or complement proteins, can bind to pathogens and have an important role in targeting pathogens for phagocytosis. Previous studies in our laboratory have demonstrated that phagocytosis activity in zebrafish (Danio rerio) follows a pattern of daily variations. However, neither the kinetics of the phagocytic activity in the zebrafish system nor the effect of opsonization of target bacteria in phagocytosis ssaysare currently known. This study aims to identify the effect of opsonization on the kinetics and magnitude of phagocytosis of E. coli by zebrafish kidney neutrophils and macrophages. Preliminary results show that opsonization with pooled fish serum may increase the rate of phagocytosis, but not the magnitude.

THE EFFECT OF IDENTIFICATION STYLE ON CONFIDENCE INFLATION IN EYEWITNESS TESTIMONY

Kelsey Stratton ('11), Psychology

Previous eyewitness identification research has shown that confidence is not always a reliable predictor of accuracy, and that this may be due to confidence inflation. The purpose of this study was to determine if confidence inflation could be altered by identification style. Specifically, the goal was to investigate the effects of self-perception and public commitment on confidence (both before and after having seen the lineup), by having participants make private or public identifications, respectively. Additionally, by using target present and target absent lineups, the accuracy of participant responses could be controlled. Results revealed no differences in confidence between identification style (private or public), regardless of participant accuracy. However, the relationship between confidence and accuracy was most reliable when confidence was assessed after a private suspect identification (post-lineup), $r(30)=.569$, $p<.001$. Further there was a significant improvement in this correlation from pre-lineup measures ($r(30)=.038$, $p=.842$), $z=-2.23$, $p=.026$. While the confidence-accuracy correlation neared significance when identifications were made publicly post-lineup ($r(31)=.347$, $p=.056$), there was no significant improvement from pre-lineup levels ($r(31)=.038$, $p=.840$), $z=-1.21$, $p=.226$. This indicates that self-perception may be more responsible for confidence inflation than public commitment, but, interestingly, that higher confidence levels do not necessarily lead to poorer confidence-accuracy correlations as previously suspected.

CREATIVITY IN EDUCATION

Kendyl Sullivan ('11), Anthropology

THE RELATIONSHIP AND INTERACTIONS BETWEEN EDUCATION AND CREATIVITY IN ELEMENTARY SCHOOL, HIGH SCHOOL, AND COLLEGE Creativity in relation to education is a hot topic: how the two interact, if it is possible to "teach" creativity, the importance of teaching or encouraging creativity in today's society, and what defines creativity are just a few of the questions commonly asked surrounding the controversial subject. In this presentation, I will be addressing these issues on my journey to get to the bottom of some specific questions: what is the current relationship between education and creativity, is this the best possible relationship for our education system and students, and what are some potential solutions for remedying the relationship (if I find that it is not currently the best possible)? I will use the results over thirty personal interviews I have conducted with students and educators, my analysis of existing scholarly works on the topic, my own opinions on the topic, and personal hypotheses on what can and should be fixed regarding creativity in our current school systems.

THE EFFECTS OF POLLUTION ON AUSTRALIAN CORAL REEF BIODIVERSITY

William Supple ('12) and Jazmine Russell ('13), Environmental Studies

The Great Barrier Reef is part of the largest coral reef system on the planet. It spans over 200km along the coast of Queensland and is composed of over 2,900 smaller reefs. The reefs are made up of the calcareous exoskeletons of coral polyps and are home to incredibe biodiversity. The Great Barrier Reef and other reefs off Australian shores are under serious threat by land-based pollution. Included in these land-based pollutants are sedimentation, fertilizer, pesticides, and heavy metals. Sedimentation rates have increased rapidly due to riparian deforestation adjacent to coral reefs. Sediment increases turbidity in the water and buries photosynthetic organisms, starving production in the basal trophic level. 80% of land bordering the Great Barrier Reef is used for agriculture or pasture. Overuse of pesticide and fertilizer has led to bioaccumulation of chemicals in higher trophic organisms and offshore eutrophication due to nitrogen and phosphorous concentrations. Overwhelming quantities of sediments and agricultural runoff into reef habitat and their potentially devastating effect make these factors the most important to be aware of and regulate in the future to preserve reef health. Lack of management and regulation regarding rapidly increasing urban and infrastructure development acts to compound the pollution problem. This development is projected to continue with a 40% increase in coastal population by 2026. In order to preserve these valuable reef ecosystems, a more cooperative system between land-based and marine groups is necessary for pollution regulation.

BISPHENOL A AS AN OBESOGEN

Molly Susla ('13) and Kelly Kneeland |'13), Environmental Studies

Bisphenol A (BPA) is a chemical compound commonly found in polycarbonate plastic products such as baby bottles, food cans, and dental fillings. BPA has a chemical structure closely related to that of estrogen; thus, it has been shown to mimic the effects of natural animal and human hormones, disrupting the endocrine system. BPA is also shown to be ingested and metabolized by humans on a daily basis, and therefore while not persistent in the body, dangerous in that it is everywhere in our environment. Additionally, studies have shown that the chemical can effect the thyroid hormone receptor during fetal development. This receptor controls adipose tissue and can thus affect fat storage. Another way BPA affects body weight is through speeding up the conversion of 3T3 cells into adipocytes (fat cells). We have researched the effects of BPA on fat storage, weight gain and obesity.

COMPUTATIONAL MODELING OF MACROECONOMICS

Adam Szatrowski ('12) and Stephen Sentoff ('11), Computer Science

Our research tests the connection of microeconomic theory to macroeconomic theory through transaction-based simulation. We created a computer simulation of thousands of agents endowed with behavior governed by microeconomic theory. We utilize random distributions in creating preferences and factors for these agents, giving our agents a broad spectrum of economic behaviors. Our simulation allows us to observe the economic metrics of inflation, unemployment, commercial inventories, and domestic savings in the aggregate. We then observe the macroeconomic characteristics that emerged in the aggregate, testing these against modern macroeconomic theory.

ATLAS OF MAINE: SHELLFISH, EELGRASS, AND SHOREBIRD HABITAT OF DOWNEAST MAINE

Noah Teachey ('13), Environmental Studies

The coast of Downeast Maine is home to a variety of marine plant and animal species. This map displays shellfish, eelgrass, and shorebird habitats on the coast of Downeast Maine. Shellfish, eelgrass, shorebird, rivers, and counties border polygons were obtained from the Maine Office of GIS as was the DEM data. The states border polygon was obtained from ESRI. Projected in NAD83 UTM Zone 19N.

ATLAS OF MAINE: LOCATIONS OF POLICE STATIONS AND FIRE STATIONS IN THE DOWNEAST REGION OF MAINE

Emily Ten Eyck ('13), Environmental Studies

This map displays the locations of police stations and fire stations in the downeast reagion of Maine consisting of Hancock and Washington counties.

CONVICTED OFFENDER DNA ANALYSIS AT THE MAINE STATE POLICE CRIME LAB

Andrew Thomas ('11), Chemistry

Since its inception, forensic DNA analysis has become a vital tool of the criminal justice system. A minuscule amount of DNA left behind at a crime scene can be enough to compare to a sample taken from a suspect, providing compelling evidence of their guilt or innocence. The federal combined DNA index system (CODIS) provides access to the genetic profiles of previously convicted offenders, allowing for their rapid identification should they commit another crime and leave behind DNA. This January, I worked as a Forensic DNA Intern at the Maine State Police Crime Lab in Augusta, where I prepared convicted offender samples for DNA profiling. This process involved extracting DNA from sample collection cards, purifying it, and quantifying it with qRT-PCR. My work helped to cut down on the substantial backlog of convicted offender samples that has accumulated at the Augusta crime lab.

WIN SOME, LOSE SOME: HOW OUTCOME INFLUENCES SUBSEQUENT MEMORY

Lauren Tracy ('11), Psychology

Previous research suggests that the anticipation of reward can benefit memory formation. However, the influence of reward anticipation is not dissociated from the influence of loss avoidance. The extent of this memory facilitation on learning semantic information is also unknown. This study investigates the difference in incidental memory formation of students when reward or loss is anticipated during the presentation of pictorial cues preceding the completion of a semantic knowledge task. Memory of pictorial cues and learning of semantic knowledge was assessed either immediately following the initial presentation or one week after original exposure.

THE EFFECTS OF MERCURY ON PREGNANT WOMEN: THE RELATIONSHIP BETWEEN SEAFOOD CONSUMPTION, MERCURY EXPOSURE, AND FETAL DEVELOPMENT

Leah Turino ('11) and Carly Hallowell ('13), Environmental Studies

Fish is low in saturated fat, a good source of protein, and perhaps most importantly, a good source of omega-3 fatty acids, which are believed to benefit the cardiovascular system. However, many types of fish contain high levels of methylmercury, a chemical form of mercury known to impair neurological development in fetuses, infants, and children. Our poster presents the results of scientific studies that seek to establish the relationship between maternal consumption of fish, mercury exposure, and fetal development. We find the science to suggest a negative relationship between maternal fish consumption and fetal development.

ZOMBIES, SEX DOLLS AND THE END OF THE WORLD: ENLIGHTENMENT AND DYSTOPIA IN THOR KUNKEL'S SCHAUMSCHWESTER

James Violette ('11), German/Russian

This presentation will be in German. My paper examines Thor Kunkel's recent work Schaumschwester, in which an 'Ordo Amois' is established on earth following the effective extinction of humanity. People are replaced by enlightened female robots in human form, originally designed to take the place of women in the bedroom. I will argue that Kunkel's text is a model for understanding the fundamental flaws of enlightenment philosophy, and serves as well to depict the roots of catastrophes like the Second World War. I will argue that enlightenment philosophy has crippled our ability to re-think and re-evaluate the past, and use both philosophical texts as well as further literary examples in Sir Thomas More's Utopia and Max Brook's World War Z.

FRITZ LANG'S INDIAN EPIC: THE FAILURE OF CINEMA AND MODERNITY

Matthew Von Vogt ('11), Independent Studies

This presentation focuses on the subject of my honors thesis, Fritz Lang's penultimate film the The Tiger of Eschnapur/The Indian Tomb (1959). Although the film is the only one Lang made in India, the film relates to his career through continuing his career-long thematic emphasis on modernity and the potential for cinema. Specific attention is paid to the ways in which the film represents a revolt against Lang's earlier films and former utopian ideas for the capabilities of Germany and narrative cinema.

INDUSTRIAL AGRICULTURE'S ATTEMPT TO MIMIC A NATURAL PROCESS: THE CASE OF THE COMMERCIAL POLLINATION INDUSTRY

Robyn Wardell ('11), History

One third of the food that we eat comes from honeybee pollination alone. The value of crops that depend on pollinators to reproduce is on average much higher than that of the crops that do not require the work of insects. Bee pollination is responsible for 5 billion in added crop value per year in the United States alone. The work of bees and pollinators like them is an essential service that helps

ecosystems remain in equilibrium and that creates food to eat. The commercial pollination industry has used this essential ecosystem service that bees provide since the 1940's. The industry has grown by leaps and bounds. As global food demand has risen, so too has demand for commercial pollination. This research takes a look at the industry and how it is being affected by recent decreases in honeybee populations.

THE TEMPLE OF THE GOLDEN PAVILION: A FREUDIAN READING

Allya Weiss ('12), East-Asian Studies

An in-depth analysis of Yukio Mishima's The Temple of the Golden Pavilion, and an examination of the text through a Freudian lens. The novel follows Mizoguchi, a young, disturbed man through his childhood and adolescence, culminating in his final act of arson at the end of the novel. This study explores the psychoanalytic theories of the Oedipal Complex, sadomasochism, and the death instinct, as seen in Mizoguchi. His childhood trauma involving his mother and his father brings forth his sadomasochistic tendencies. As he conflates eroticism, violence, and death, Mizoguchi's patterned impulses move from masochism to sadism to ultimate destruction. The study will conclude that in razing the Golden Temple, Mizoguchi metaphorically kills his parents, an act of Oedipal Fulfillment.

THE GENETIC AND MOLECULAR MARKERS OF CHOLINE SUPPLEMENTATION IN THE HIPPOCAMPUS AND PREFRONTAL CORTEX OF FEMALE RATS.

Alessandra Welker ('11), Psychology

This research seeks to identify how dietary supplementation of choline affects areas of the brains of female rats that are known to be implicated in depression and other anxiety disorders. Previous studies in the rat model have shown that supplementation of choline can be neural protective and may buffer against the effects of depression. No behavioral manipulations except for change in diet were used in these studies. In order to generate a molecular pattern of choline supplementation in the brain of rats, three markers associated with known pathologies in depressed patients, NT-3, HDAC and neurogenesis were analyzed by IHC. We found that the amount of Neurotrophin-3 (NT-3) was increased, HDAC activity decreased and more neurogenesis was seen in the hippocampi of supplemented rats. These results suggest neural protective effects of choline supplementation during development of the rat similar to the molecular profile induced by known antidepressants.

HISTORY OF AND GEOMORPHOLOGIC PROCESSES ACTING ON THE MESSALONSKEE STREAM, OAKLAND-WATERVILLE, MAINE

Greta Wells ('11), Geology

This project examines the history of and the geomorphologic processes acting on the Messalonskee Stream in Oakland- Waterville, Maine. Maps and aerial photographs were used to study changes in the stream's course over time, beginning with the earliest available records from the early nineteenth century. Field observations and digital photographs were taken at four locations along the stream to examine current geomorphologic processes acting on it. The present course of the Messalonskee Stream differs little from its course shown on maps from the nineteenth century and aerial photographs from the twentieth century. Although segments of the stream's course appear different on maps from 1879 and 1892, these are the only maps that show these discrepancies, suggesting that the differences might be the result of less accurate mapping techniques instead of actual changes in the stream course. Although the stream's course does not appear to have changed significantly, aerial photographs show changes over time in the sizes and shapes of islands in the stream channel. The above-water areas of the islands vary between the photographs. This might reflect variations in the water level, which could be due to season, precipitation, or snow melt. It could result from fluctuations in the sediment deposition and removal on the islands, as well. Field observations provided much evidence of current geomorphologic processes acting on the Messalonskee Stream, including cut banks, point bars, and surface creep. These processes could have serious implications for the communities that have grown up around the stream over the past few centuries.

EFFECTS OF GESTURE TRAINING ON CAUSAL UNDERSTANDING

Derek Wise ('12) and Nicole Pickering ('12), Psychology

This study examined the effects of training and gesture use on physical- and psychological-causal understanding in the context of eyewitness testimony for 3- to 5-year-olds. Thirty-six preschoolers were given training in gesture use to supplement explanation of causal situations, asked to predict the outcome of a photographed situation using their hands, and provided with three possible outcomes to choose between. Older children performed better than younger children and explanation quality was shown to correlate to understanding of causal situations. Training and gesture use together did not affect accuracy of causal judgment, though the presence of one without the other impaired performance. Together, these findings suggest that brief gesture training does not assist preschoolers in understanding causal situations.

CHARACTERIZING THE ZEBRAFISH KIDNEY PHAGOCYTE RESPIRATORY BURST RESPONSE TO LYOPHILIZED *STAPHYLOCOCCUS AUREUS*

Travis Wright ('12), Biology

The innate immune system provides the first line of defense against disease, including those caused by bacteria. Among the mechanisms that protect animals from infection are the bactericidal actions of phagocytic white blood cells. After phagocytosing (engulfing) bacteria, macrophages and neutrophils produce reactive oxygen species (ROS), including superoxide anion and hydrogen peroxide, to lyse the internalized pathogens (Ellis 2001). This process of ROS production is known as respiratory burst. The magnitude and kinetics of ROS production can be measured using an in vitro respiratory burst assay. In working to identify the daily variations of phagocytic and ROS production capabilities of these white blood cells when stimulated by PMA and killed bacteria, the necessity of modifying our protocol arose. Through our study, we have found that eliminating a wash of the harvested leukocytes significantly increases the stimulation index, the fold increase of ROS production due to respiratory burst activity over ROS production resulting from normal metabolism. Thus, we have eliminated this step from our protocol and only begun work on determining the optimal bacteria:leukocyte ratio to use in the assay, beginning with a ratio of approximately 300:1.

INNATE IMMUNOLOGICAL IMPACT OF R-(+)-CARVONE, TRICAINE (MS-222) AND 2-PHENOXYETHANOL ON ZEBRAFISH

Charles Wulff ('11), Biology

SUSTAINING PLATES AND IDENTITIES: THE SOCIO-POLITICAL IMPLICATIONS OF 'LOCAL' FOOD IN JAPAN

Al Yamanaka ('11), East-Asian Studies

This paper analyzes identities and communities that form around the complex sociopolitical term, 'local' food in Japan. There is no over-arching definition of 'local' food; it changes depending on its context and the actors using the term. As such, its connotations are manipulated by a variety of actors, such as the national government and the 'urban social elite' in Japan. These groups promote a sense of 'local' that favor the elite heads of the community and not all of its participating members. I argue that the notion of 'local' food advocated by the national government and 'urban social elite' form an imagined community, in which actors agree to adhere to abstract socio-political norms. These communities then serve as a conduit for providing powerful government lobbies and businesses to manipulate 'local' to serve their own interests. The goal of this paper is to analyze the complex nuances of 'local' food in Japan, and how it is used by the elites heads of the national government and 'urban social elite' for their political and economic gain. In conclusion, I would like to promote a 'solidarity-seeking' local community in which all members have equal agency in deciding what local food is and its consumption. By determining the function of 'local' in different contexts, I hope to assess the underlying value of 'local' and the principles it seeks to advocate.

POST GLACIAL VEGETATION IN BOULDER CREEK, BOULDER, COLORADO

Dhokela Yzeiral ('13), Geology

Pollen cores are essential because it is a useful medium that contains a stratigraphic sequence of pollen. Analysis of the type and frequency of the pollen in a certain layer is used to study changes in climate or regional vegetation. This research project seeks to determine the post-glacial vegetation history in the front range of Boulder, Colorado by contrasting the fossil pollen compositions in the upper and lower levels of sedimentary deposits. [The full abstract is in working progress]

LOVE CANAL: WHAT REALLY HAPPENED

Stephen Zaharias ('11), History

Love Canal is known as one of the worst environmental disasters in the history of the United States. It has become synonymous with toxic waste hazards, but it is perhaps best associated with the effects such hazardous waste had on the local residents. Incidents of cancer, miscarriages, and birth defects dominated the headlines of the Love Canal story, with the media often sensationalizing and exaggerating the extent of the ill-health effects they found in that little suburb in upstate New York. But the scientific studies conducted on Love Canal and its residents do not paint such a clear picture. The scientific uncertainty found during my research has cast Love Canal in a startlingly new light, and has questioned the basic assumptions people (including historians) often make about the events that occurred at Love Canal.

A DECAYED TOOTH: THE EVIL AND IMPERMANENCE OF BEAUTY IN 'THE TEMPLE OF THE GOLDEN PAVILLION'

Nicholas Zeller ('13), East-Asian Studies

Mishima's The Temple of the Golden Pavilion is replete with themes that defy traditional preconceptions. One of these themes, and perhaps the most important, is the role of beauty. Throughout the novel, rather than being something good and pure, Mishima identifies beauty as evil and its power to corrupt and control is displayed. Beauty is also shown to be transient and easily stifled. The idea that beauty is evil is an obvious departure from the cultural norm, which may reveal the changing attitudes of a post-WWII Japan.