



Spring  
Symposium  
2011

Undergraduate Research and Creative Work  
University of Hawai‘i – Mānoa

Honors Program  
&  
Office of the Vice Chancellor of Research and Graduate Education

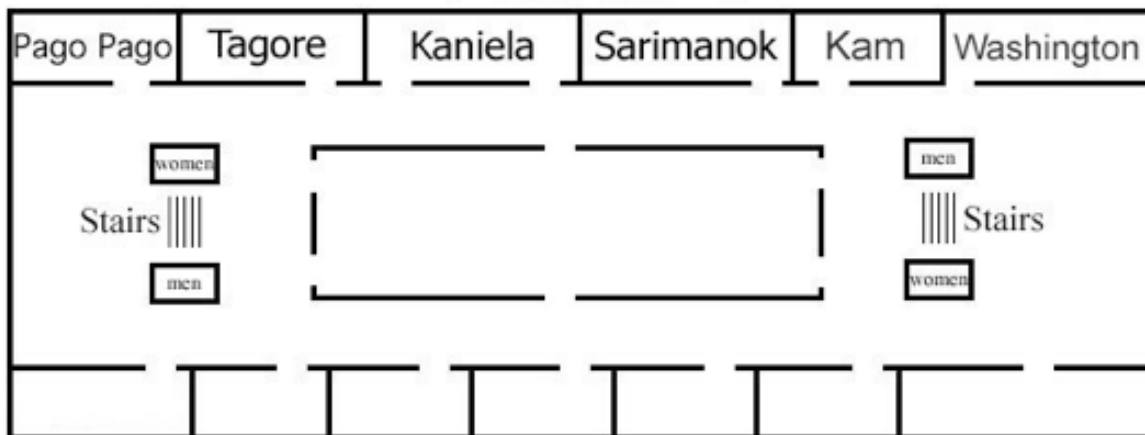
April 23, 2011  
8am to 2pm

Imin Conference Center  
Honolulu, Hawai‘i

## SCHEDULE

TIME	ACTIVITY	LOCATION
8:00-8:30am	Registration and Poster Set-Up Continental Breakfast	Keoni Auditorium
8:30-8:45am	Opening Ceremony	Keoni Auditorium
8:45-10:15am	Oral Presentations Session One	Breakout Rooms on 2 <sup>nd</sup> Floor
10:15-10:30am	Break	
10:30-11:30am	Poster Presentations	Keoni Auditorium
11:30am-12:45pm	Oral Presentations Session Two	Breakout Rooms on 2 <sup>nd</sup> Floor
12:45-1:45pm	Lunch and Award Presentations	Garden Dining Room
1:45-2:00pm	Take-Down and Clean-Up	

Second floor of East-West Center's  
Hawai'i Imin International Conference Center  
Thomas Jefferson Hall



## **BREAKOUT ROOMS**

Oral Presentations Session One  
8:45-10:15am

<b>PAGO PAGO</b>	Social Science Proposals
<b>TAGORE</b>	Arts & Humanities Projects
<b>KANIELA</b>	Natural Science Projects
<b>SARIMANOK</b>	Natural Science Projects
<b>MANDARIN</b>	Arts & Humanities Proposals

Poster Presentations  
10:30-11:30am  
Keoni Auditorium

Oral Presentations Session Two  
11:30am-12:45pm

<b>PAGO PAGO</b>	Natural Science Proposals
<b>TAGORE</b>	Arts & Humanities Projects
<b>KANIELA</b>	Natural Science Projects
<b>SARIMANOK</b>	Social Science Projects
<b>WASHINGTON</b>	Social Science Projects
<b>MANDARIN</b>	Arts & Humanities Proposals

**Oral Presentations Session One  
8:45-10:15am**

**PAGO PAGO  
Social Science Proposals**

8:45	Kathy L. Aldinger	The 2011 APEC Summit in Hawai'i and It's Impact on the Process of Peace and Stability?
9:00	Chelsea Dau	Improving Hawaii Public School Nutrition: Using Diabetes Prevention as Motivation
9:15	Anna Koethe	Measuring the effectiveness of the Hawai'i Meth Project as an anti-drug campaign
9:30	Nikola-Maria K.Komailevuka	Globalization through Trade Liberalization in the Pacific: PACER & Fiji
9:45	Joseph Mendez	A Meta-Analysis of the Techniques Used to Detect and Exploit the Finances of Criminal and Terrorist Organizations Within the United States
10:00	Boheng Shao (Jeremy)	Energetic Contradiction and Environmental Conflicts within Sino-US Relation in next 30 Years

**TAGORE  
Arts & Humanities Projects**

8:45	Eric Birkeland	Rope
9:00	Carrie Downing-Larick	Homosexuality: A Blending of Science and Literature
9:15	Kara Hisatake	"Nothing Says I Despise You Like a Blowjob": Opening Queer Moments for Queer Spaces in Harry Potter Slash Fan Fiction
9:30	Kelsey Inouye	Performing & Constructing Identity in Anorexia Memoir
9:45	Kathy Nii	Freedom Songs: A Study of Bangladeshi Cultural Resistance
10:00	Michelle-Yvette HC Rose	Sir Thomas Malory, Rebel Writer Extraordinaire

**Oral Presentations Session One  
8:45-10:15am**

**KANIELA  
Natural Science Projects**

8:45	Hannah Cooper	Assessing vulnerability due to sea-level rise in Maui, Hawai'i using LiDAR remote sensing and GIS
9:00	Kyle Dahlin & Nicholas Griffith	Tracking Coral Through Time: The Mathematics of Coral Life Histories
9:15	Danielle Kiele Hoen	Determining the Trophic Position of Five Deepwater Hawaiian Fish Species
9:45	Whitney R. Reyes	Restoration Management Techniques to Facilitate Growth of Out planted <i>Marsilea villosa</i>
10:00	Samantha Wojciechowski	Cold Case: A study of cooling temperatures in Hakalau

**SARIMANOK  
Natural Science Projects**

8:45	Diane A. Chen	Comparison of Gene Expression in 10 ME and L88.3 Tumorigenic Cell Lines Using DNA Microarray Analysis
9:00	Rissa Fedora & Tyler Law	Diffusible Proteins in a Filamentous Cyanobacteria
9:15	Jennifer Ishimoto	Degradation of pyrene by <i>Mycobacterium</i> species: single versus consortia
9:30	Youngsu Cho Kwon	Mathematical model to analyze the role of the extracellular matrix structures fractones in morphogenesis during brain development.
9:45	Robert G. Young	The "Lillie Transition": Modeling the Onset of Saltatory Conduction in Myelinating Nerves

**Oral Presentations Session One**  
**8:45-10:15am**

**MANDARIN**  
**Arts & Humanities Proposals**

8:45	Rebecca Dew	Morality & Mortality: The Interplay of God and Human Nature in <i>The Brothers Karamazov</i>
9:00	Brady Evans	Drawing from the Sublime
9:15	Karleanne Matthews	Structured Fantasy: The American Tall Tale in Children's Literature
9:30	John Cameron McClain	Ghosts, Robots and Things In-between: A Florilegium
9:45	Rain Wright	Struggle and Strength



**Poster Presentations**  
**10:30-11:30am**  
**Keoni Auditorium**

**Arts & Humanities Posters**

Eric Birkeland	Rope
Ailsa Cooper	Contemporary Art for Earth's Sake
Rebecca Dew	Morality & Mortality: The Interplay of God and Human Nature in <i>The Brothers Karamazov</i>
Brady Evans	Drawing from the Sublime
Bali Fergusson	Atheism and the Asura: A unifying theory of 'Proto- Indo- European- Religion?'
Alan Herbert (Aish)	A Paradox in the Name of God
Kara Hisatake	"Nothing Says I Despise You Like a Blowjob": Opening Queer Moments for Queer Spaces in Harry Potter Slash Fan Fiction
Kelsea Hosoda	E Kūkulu Kākou i ka Lolouila: Let's Build a Computer
Kelsey Inouye	Performing & Constructing Identity in Anorexia Memoir
Mai Kawahara	Music Performance Anxiety
Karleanne Matthews	Structured Fantasy: The American Tall Tale in Children's Literature
John Cameron McClain	Ghosts, Robots and Things In-between: A Florilegium
Kathy Nii	Freedom Songs: A Study of Bangladeshi Cultural Resistance
Megan Oshiro	Construction of Identity of Okinawans in Hawaii and California
Michelle-Yvette HC Rose	Sir Thomas Malory, Rebel Writer Extraordinaire
Rachel Shaddox	Facing the Apartheid Past: The TRC, Race and the New South African Society
Janelle Takesono	The Butterfly's Effect: The Internet's Effect on Portrayals of Japanese Women
Jacob Vantor	The <i>USS Arizona</i> Memorial: Challenge and Change in Maritime Heritage
Rain Wright	Struggle and Strength

**Poster Presentations**  
**10:30-11:30am**  
**Keoni Auditorium**

**Social Sciences Posters**

David Abitbol	The Semiotics of Hawaii's Tourism Industry
Kathy L. Aldinger	The 2011 APEC Summit in Hawai'i and It's Impact on the Process of Peace and Stability?
Mariam F. Beard	Summer Sessions Hawaii
Marissa-Lyn Chomko	Caring for Those Who Care: A Study of Japanese Americans Caring for their Elder Parents
Chelsea Dau	Improving Hawaii Public School Nutrition: Using Diabetes Prevention as Motivation
Kristen Domingcil	Natural Dyes from Invasive Plants for Hawaii's Sustainable Environment
Liana Kobayashi	Buying Alcohol Illegally – Does Gender Matter?
Anna Koethe	Measuring the effectiveness of the Hawai'i Meth Project as an anti-drug campaign
Nikola-Maria K.Komailevuka	Globalization through Trade Liberalization in the Pacific: PACER & Fiji
Joseph Mendez	A Meta-Analysis of the Techniques Used to Detect and Exploit the Finances of Criminal and Terrorist Organizations Within the United States
Guteriano Nicolau Soares Neves	Assessing Timor-Leste's Petroleum Revenues Management
Tolly Powell	2011 Global Investment Research Challenge - KLA Tencor
Damion Sailors	<i>Ho'olele Lupe: An Analysis of Traditional Hawaiian Kite Flying</i>
Boheng Shao (Jeremy)	Energetic Contradiction and Environmental Conflicts within Sino-US Relation in next 30 Years

**Poster Presentations**  
**10:30-11:30am**  
**Keoni Auditorium**

**Natural Sciences Posters**

Neil Abranyi	Environmental Impacts of Deep Sea Water Air Conditioning
Diane A. Chen	DNA Microarray Analysis of Tumor Surveillance
Hannah Cooper	Assessing vulnerability due to sea-level rise in Maui, Hawai'i using LiDAR remote sensing and GIS
Kyle Dahlin	Tracking Coral Through Time: The Mathematics of Coral Life Histories
Ngoc Anh Dao	The Function of Phosphorylated Tyrosine Residues in Phosphoprotein Enriched in Astrocytes 15 kiloDalton (PEA-15)
Marlee Elston	Improving the piggyBac Gene Transfer System
Rissa Fedora	Diffusible Proteins in a Filamentous Cyanobacteria
Nicholas Griffith	Tracking Coral Through Time: The Mathematics of Coral Life Histories
Rin Hayashi	Control Methods Applied to the Linear Flexible Joint Inverted Pendulum
Danielle Kiele Hoen	Determining the Trophic Position of Five Deepwater Hawaiian Fish Species
Jennifer Ishimoto	Degradation of pyrene by <i>Mycobacterium</i> species: single versus consortia
La'Toya I. James	Ecology of <i>Vibrio parahaemolyticus</i> : Potential pathogenicity within the Ala Wai Canal
Jim Woo Kim	Genetic Variation In An Invasive Species: Strawberry Guava
Youngsu Cho Kwon & Rich Kodama(UBM student)	Mathematical model to analyze the role of the extracellular matrix structures fractones in morphogenesis during brain development.
Tyler Law	Diffusible Proteins in a Filamentous Cyanobacteria
Amanda Lee	Insights into the mechanistic basis of the Irukanji syndrome by evaluating the hematologic and immunologic responses in whole blood

**Poster Presentations**  
**10:30-11:30am**  
**Keoni Auditorium**

**Natural Sciences Posters, continued**

Kimberley Mayfield	The effects of naturally occurring estuarine impoundment on the turbidity, nutrient, and chlorophyll levels: Lawai and Waipa streams as case studies
Crystal K. Morton	Ho'omalūō: Understanding the Origin of Native Hawaiian Conservation Practices
Yuho Ono	Antibacterial Activity of <i>Vibrio</i> sp. Strain OCN008 isolated from <i>Porites compressa</i>
Monica Orcine	Comparative study of histaminergic neurons in calanoid copepods
Whitney R. Reyes	Restoration Management Techniques to Facilitate Growth of Out planted <i>Marsilea villosa</i>
Jeremy Thacker	Can video game training enhance attentional capabilities
Samantha Wojciechowski	Cold Case: A study of cooling temperatures in Hakalau
Robert G. Young	The "Lillie Transition": Modeling the Onset of Saltatory Conduction in Myelinating Nerves

**Oral Presentations Session Two**  
**11:30am-12:45pm**

**PAGO PAGO**  
**Natural Science Proposals**

- |       |                   |  |
|-------|-------------------|--|
| 11:30 | Marlee Elston     | Improving the piggyBac Gene Transfer System  |
| 11:45 | Rin Hayashi       | Control Methods Applied to the Linear Flexible Joint Inverted Pendulum                       |
| 12:00 | La'Toya I. James  | Ecology of <i>Vibrio parahaemolyticus</i> : Potential pathogenicity within the Ala Wai Canal |
| 12:15 | Crystal K. Morton | Ho'omalūō: Understanding the Origin of Native Hawaiian Conservation Practices                |

**TAGORE**  
**Arts & Humanities**

- |       |                     |   |
|-------|---------------------|---|
| 11:30 | Ailsa Cooper        | Contemporary Art for Earth's Sake   |
| 11:45 | Bali Fergusson      | Atheism and the Asura: A unifying theory of 'Proto-Indo-European-Religion' ?  |
| 12:00 | Alan Herbert (Aish) | A Paradox in the Name of God  |
| 12:15 | Rachel Shaddox      | Facing the Apartheid Past: The TRC, Race and the New South African Society    |
| 12:30 | Janelle Takesono    | The Butterfly's Effect: The Internet's Effect on Portrayals of Japanese Women |

**Oral Presentations Session Two  
11:30am-12:45pm**

**KANIELA  
Natural Science Projects**

- 11:30 Ngoc Anh Dao The Function of Phosphorylated Tyrosine Residues in Phosphoprotein Enriched in Astrocytes 15 kiloDalton (PEA-15)
- 11:45 Amanda Lee Insights into the mechanistic basis of the Irukanji syndrome by evaluating the hematologic and immunologic responses in whole blood
- 12:00 Yuho Ono Antibacterial Activity of *Vibrio* sp. Strain OCN008 isolated from *Porites compressa*
- 12:15 Monica Orcine Comparative study of histaminergic neurons in calanoid copepods

**SARIMANOK  
Social Science Projects**

- 11:30 Marissa-Lyn Chomko Caring for Those Who Care: A Study of Japanese Americans Caring for their Elder Parents
- 11:45 Liana Kobayashi Buying Alcohol Illegally – Does Gender Matter?
- 12:00 Damion Sailors *Ho'olele Lupe*
- 12:15 Guteriano Nicolau Soares Neves Assessing Timor-Leste's Petroleum Revenues Management

**Oral Presentations Session Two  
11:30-12:45**

**WASHINGTON  
Social Science Projects**

- |       |                 |  |
|-------|-----------------|--|
| 11:30 | David Abitbol   | The Semiotics of Hawaii's Tourism Industry             |
| 11:45 | Mariam F. Beard | Summer Sessions Hawaii                                 |
| 12:00 | Tolly Powell    | 2011 Global Investment Research Challenge - KLA Tencor |

**MANDARIN  
Arts & Humanities Proposals**

- |       |               |  |
|-------|---------------|--|
| 11:30 | Kelsea Hosoda | E Kūkulu Kākou i ka Lolouila: Let's Build a Computer                       |
| 11:45 | Mai Kawahara  | Music Performance Anxiety  |
| 12:00 | Megan Oshiro  | Construction of Identity of Okinawans in Hawaii and California             |
| 12:15 | Jacob Vandor  | The <i>USS Arizona</i> Memorial: Challenge and Change in Maritime Heritage |

## **ABSTRACTS**

Abstracts of paper and poster presentations are listed in alphabetical order of presenter's last name. Information below the name includes the student's major, the purpose of their presentation, the category of their presentation, and whether they are presenting a poster and/or an oral presentation. The faculty mentor, if appropriate, is listed below the abstract.

David Abitbol  
Political Science  
Completed Project  
Social Sciences  
Honors Program  
Oral and Poster Presentation  
11:30am - Washington Room

### The Semiotics of Hawaii's Tourism Industry

Early in the twentieth century, as businesses in Hawaii became increasingly dependent on tourism, advertisements were used to attract more visitors to the islands. Now, tourism is a vital component of Hawaii's economy and advertisements play an important role in bringing visitors to the Islands. Contemporary advertisements depict Native Hawaiians, the Hawaiian culture, and the Islands of Hawaii in various ways. Some of these depictions portray Hawaii as an exotic paradise with the indigenous peoples as 'noble savages' and 'alluring' hula girls. This paper looks at contemporary advertising images used in select tourist destinations on Oahu as a form of discourse and how they represent and signify Hawaii and its people. These representations can be understood as tropes, or metaphors, that signify Hawaii's 'otherness' to potential tourists and guests. Semiotics, the study of signs and symbols, will be used as a method of inquiry and analysis to assess the tropes and sign functions of these advertisements. Moreover, Edward Said's work on Orientalism will be used to evaluate how images as discourse become a source of knowledge and influence for tourists. Through the application of semiotics and Orientalism, my research will explore the relationship between advertising images and power in Hawaii.

Mentors: Sankaran Krishna & Noenoe Silva

Neil Abranyi  
Natural Resource and Environmental Management  
Completed Project  
Natural Sciences  
Undergraduate Research Grant  
Poster Presentation

### Environmental Impacts of Deep Sea Water Air Conditioning

A proposed seawater air conditioning system (SWAC), that uses the cold temperatures of deep ocean water to cool an onshore system and return the seawater to a shallower depth, has been proposed for Honolulu. The goal of this research project was to gain a better understanding of the environmental impacts of SWAC and the physical properties of seawater and its contained biomass. I designed and conducted a study to address whether the translocation of deeper seawater to a shallower setting would substantially affect the concentration of particulate organic carbon (POC), a fundamental input of carbon to marine ecosystems. In the context of ongoing planning for SWAC projects in Hawaii we investigated—at the Natural Energy Laboratory of Hawaii Authority (NELHA) in Kona Hawaii—the POC differences between deep (674 m; mean temperature 8.4°C) and shallow (21 m; 26.2°C) seawater. POC was highly variable over four weeks of observation, but showed generally higher concentrations in collected deep seawater ( $35.2 \pm 6.0 \mu\text{gL}^{-1}$ ; mean  $\pm$  SE;  $n=15$ ) compared to shallow seawater collections ( $26.3 \pm 4.0 \mu\text{gL}^{-1}$ ;  $n=15$ ), which contrasts conventional views of higher values at the surface. These findings suggest that amounts of POC translocated by a deep seawater air conditioning system may amount to 134% more than surface POC. High POC may be created by increased production along the large surface of the deep intake pipeline (biofouling). Potential changes related to increased POC input in habitats surrounding effluent plumbing warrant further study.

Mentor: Dr. David Beilman

Kathy L. Aldinger  
Interdisciplinary Studies - Peace Studies and Conflict Resolution  
Project Proposal  
Social Sciences  
Honors Program  
Oral and Poster Presentation  
8:45am - Mandarin Room

### The 2011 APEC Summit in Hawai'i and It's Impact on the Process of Peace and Stability?

The 2011 Asia-Pacific Economic Cooperation (APEC) Summit will be held in Honolulu Hawai'i November 12-13, 2011. The economic and trade goals of APEC and the impact on peace and stability on the member economies in the Asia-Pacific region will be researched in depth because the vision statements of the APEC Leaders specifically has a section entitled Path toward a secure future. Within this section of the document is the pledge to safeguard the fundamental principles of security throughout the region. The project will also look at the fight against poverty and hunger, reasonable ways to assist people in the Asia-Pacific region to maintain a reasonable standard of living and security efforts. Another area of particular interest is the development of practical disaster risk management means to strengthen the ability of our economies to manage emergencies and natural disasters. The recent tsunami and earthquake in Japan can offer material in this area.

Researching the leaders that will be attending the summit and their spouses/partners will add a personal face to consider who these leaders are and what their personal lives consists of. This is one of the areas that Mahatma Gandhi felt was important to do; to humanize leaders.

Interviews and lecture notes from Anwarul K. Chowdhury, the UN Under-Secretary-General and High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States and Arun Gandhi, Mahatma Gandhi's grandson and various professionals and scholars of both peace and APEC will be referenced.

Mentors: Professor Brien Hallett and Anne Marie Smoke

Mariam F. Beard  
Entrepreneurship, International Business  
Completed Project  
Social Sciences  
Honors Program  
Oral and Poster Presentation  
11:45am - Washington Room

### Summer Sessions Hawaii

This project is a business plan for a feasible summer enrichment program. Summer Sessions Hawaii (SSH) is a two-week intensive summer enrichment seminar-based course for high school students between 15-18 years old. SSH offers two different programs—Aspiring Business option & Marine Biology option. Each intensive program is held on the island of O’ahu, providing lectures from university professors (University of Hawaii at Manoa, Hawaii Pacific University, Chaminade University) followed by on-site trips or company tours to the areas/fields that the students learn about. Cultural excursions and fun activities are planned as well.

Mentors: Dr. David Bess and Dr. Jennifer Chandler

Eric Birkeland  
English  
Completed Project  
Arts & Humanities  
Honors Program  
Oral and Poster Presentation  
8:45am - Tagore Room

## Rope

Rope is a collection of six interconnected stories. Using Norse mythology as a basis, they explore themes centered on poetry and language.

Mentor: Uzma Khan

Diane A. Chen  
Microbiology  
Completed Project  
Natural Sciences  
Honors Program & Undergraduate Research Grant  
Oral and Poster Presentation  
8:45am - Sarimanok Room

### DNA Microarray Analysis of Tumor Surveillance

Cancer has become one of the most prevalent health issues in contemporary society. However, the exact steps or stages that a cell takes from normal to cancerous has yet to be discerned. B/CN, 10ME, and L88.3 are cell lines derived as a lineage representing the progression of a cell from normal to intermediate to a cancerous phenotype. This study seeks to compare two cell lines, 10ME and L88.3. 10ME is capable of forming tumors only in immunodeficient mice and is killed by the cytokine tumor necrosis factor (TNF). L88.3 is capable of tumor formation in normal mice and is resistant to TNF-mediated killing. TNF is a member of a family of ligands that has been shown to cause cytotoxicity and is the mediator of NC effectors cells cytotoxicity. Based on Burnet's theory of immune surveillance of tumors, I compared the genetic profiles of the two cell lines to reveal certain molecular mechanisms associated with tumor progression and resistance to the putative tumor surveillance mechanism, TNF. These profiles may be essential for the design and development of treatments that target tumorigenic cells.

Mentor: Paul Patek, PhD.

Marissa-Lyn Chomko  
English  
Completed Project  
Social Sciences  
Honors Program  
Oral and Poster Presentation  
11:30am - Sarimanok Room

### Caring for Those Who Care: A Study of Japanese Americans Caring for their Elder Parents

The U.S. Census estimates that by the year 2030, 30% of the U.S. population will be 65 years or older and will be the most ethnically diverse it's ever been. The fastest growing group in the U.S. is Asian Americans who make up only 4.3% of the U.S. population, yet are a significant population in states such as Hawai'i. With an aging nation, there is an increasing concern for long-term elder care options. The family caregiving option, while most often preferred by both the caregiver (the elder's child) and the care recipient (the elder), can create great strain and stress for the caregiver. Informal caregivers often experience high levels of both physical and mental strain along with major life and work adjustments. This study explores ways in which Japanese American caregivers in Hawai'i describe their role of being "informal caregivers" to an elder parent in areas that impact their emotional health, work, and decisions on future long-term care options. Traditionally, filial obligation of female family members and expectations of role reversal are values unique to Japanese culture in relation to the elderly which may affect the caregiver; this study looks to discover whether the caregiving respondents have experiences that compare or contrast with traditionally-held beliefs. Extensive interviews and surveys were conducted to understand and define themes of the caregiving experience for Japanese Americans. Analysis of such themes serves for a better understanding of the impact of caregiving on caregivers and explores the extent to which Japanese culture may shape these experiences. Keywords: Japanese American caregivers, emotional health, work, and future long-term care options, filial obligation, Japanese culture.

Mentor: Christy Nishita

Hannah Cooper  
Geography  
Completed Project  
Natural Sciences  
Honors Program & Undergraduate Research Grant  
Oral and Poster Presentation  
8:45am - Kaniela Room

### Assessing vulnerability due to sea-level rise in Maui, Hawai'i using LiDAR remote sensing and GIS

Sea-level rise due to global warming is threatening low-lying coastal areas of the Hawaiian Islands. The IPCC (Intergovernmental Panel on Climate Change) and other studies have predicted global sea level to rise 0.58-1.9 m by the end of this century. In order to assess the impacts of sea-level rise, elevation data of high spatial resolution and vertical accuracy are required. The objective of this study is to use LiDAR (Light Detection and Ranging), a state of the art remote sensing technology, to produce a high-resolution digital elevation model (DEM) along the northern and western coastal areas of Maui and integrate with GIS (Geographical Information System) to assess the socioeconomic impacts of sea-level rise. To achieve this goal, two LiDAR datasets from USACE and NOAA were first compared and calibrated using existing tidal benchmarks for the Kahului Harbor tide station to produce consistent LiDAR coverage for Kahului and Lahaina. The raw LiDAR point cloud was filtered to separate ground returns for generating a DEM. The different sea-level rise scenarios were applied to the DEM, and the inundated area was overlaid with GIS to assess the socioeconomic impacts with each scenario. This study shows that lands vulnerable to inundation under a sea-level rise scenario of 1.9 m to have a monetary value of \$232,157,587 for Kahului and \$894,512,535 for Lahaina. The inundation maps produced from this research provides useful information for coastal managers and planners who are responsible for mitigating the risks associated with the adverse affects of sea-level rise.

Key words: global warming, sea-level rise, inundation, LiDAR, DEM, GIS, coastal mapping, Maui, Hawai'i

Mentor: Dr. Qi Chen

Ailsa Cooper  
Studio Art, Painting Focus  
Work in Progress  
Arts & Humanities  
Honors Program  
Oral and Poster Presentation  
11:30am - Tagore Room

### Contemporary Art for Earth's Sake

My thesis focuses on contemporary artists who are using their art to raise awareness about environmental issues. While environmental activism often emphasizes the data and political talk surrounding all the problems resulting from environmental degradation, the power of art suggests that it can be more beneficial for us to see thought-provoking artwork to remind us of our roles as stewards of the Earth. Often art provides us with a new outlook by using irony, humor, or a powerful image that will stay with us when we are flippantly discarding things that could be reused or buying products that are harmful to the environment. While researching these artists I have created my own artwork to encourage people to become wiser consumers. In my first piece, *Bad After-Taste*, I painted tiny rabbits in Lipton's tea bags to represent Lipton and PG Tips' procedures of cruelly testing on animals in order to claim health benefits for their tea. There is a great divide between consumers' views of what they eat and the reality of how the food is produced, just as there is between our views of the things we buy and actual practices of the companies we are supporting. Without even knowing it we are often supporting companies that are damaging the environment or involve inhumane treatment of living creatures. I hope to pay homage to the exciting artists who encourage us toward a more sustainable and compassionate future, while joining these artists in creating my own art to put everyday injustices into a new light.

Mentor: Debra Drexler

Kyle Dahlin  
Mathematics and Marine Biology  
Work in Progress  
Natural Sciences  
Undergraduate Biology and Mathematics Program  
Oral and Poster Presentation  
9:00am - Kaniela Room

### Tracking Coral Through Time: The Mathematics of Coral Life Histories

With increased carbon emissions leading to ocean acidification, coral colonies remain a subject in which accurate data is most urgently needed. Though corals create the ecological backbone of reefs worldwide, tracking their multitudinous growth and form proves daunting. Coral colonies have complex life histories including fusion, fission, recruitment, death or any combination thereof. It is precisely these complexities of life history that turn any attempt at population dynamics into a particular challenge. Here we analyze photoquadrats from five years at various sites surrounding Maui (Hawaii, USA) and use mathematical models to convey life history data for *Porites lobata*, *Porites compressa*, *Montipora capitata*, *Montipora patula* and *Pocillopora meandrina*, respectively. Within each site, a total of five photoquadrats are permanently marked to ensure site relocation so that coral colony fates can be tracked annually. Matrix models have been employed in previous studies of coral population dynamics, though they fail to account for continuous spatial dimensions. Integral projection models (IPMs) have been used to quantify life histories of various species in a multitude of ecosystems, though to the best of our knowledge no one has ever applied them to coral reefs. Specifically, integral projection models allow us to follow populations through discrete time while mapping their continuous spatial dimensions. Although we discuss the use of integral projection models solely in relation to coral colonies, the work is just as relevant within many other ecological contexts.

Mentor: Anne Castelfranco & Megan Donahue

Ngoc Anh Dao  
Biology  
Completed Project  
Natural Sciences  
Honors Program & Undergraduate Research Grant  
Oral and Poster Presentation  
11:30am - Kaniela Room

### The Function of Phosphorylated Tyrosine Residues in Phosphoprotein Enriched in Astrocytes 15 kiloDalton (PEA-15)

PEA-15 is a protein found throughout the nervous system and in certain type of cancers, which include gliomas, astrocytomas, and breast cancers. It regulates both death receptor-mediated programmed cell death and extracellular-signal-regulated kinase mitogen-activated protein kinase (ERK MAPK) signaling. The ERK MAPK pathway responds to extracellular stimuli and oncogenes by modulating cellular processes, including transcription, adhesion, survival, and proliferation. Which processes are modulated is determined in part by the substrates that ERK phosphorylates. We have demonstrated that PEA-15 forms a complex with ERK and its substrate kinase RSK2 and serves as a scaffold to enhance ERK activation of RSK2. This activity is regulated by PEA-15 phosphorylation. This study aims to determine the exact binding site of RSK2 on PEA-15 and to investigate the significance of PEA-15 phosphorylation site to its interaction with binding partners. Our previous studies indicated that serine phosphorylations of PEA-15 affect its interactions with some of the binding partners. Consequently, we are interested in the localization and function of tyrosine phosphorylation. In silico and mass spectrometry analysis predicted that PEA-15 is tyrosine phosphorylated at two of four possible sites. Consequently, here we investigate the site of tyrosine phosphorylation and its effect in regulating of PEA-15 interactions with known partners and subcellular location.

Mentor: Dr. Joe W. Ramos

Chelsea Dau  
Geography, Economics  
Project Proposal  
Social Sciences  
Honors Program  
Oral and Poster Presentation  
9:00am - Pago Pago Room

### Improving Hawaii Public School Nutrition: Using Diabetes Prevention as Motivation

Although Hawaii has one of the lowest rates of Diabetes in the United States, it is still important to promote healthy eating habits aligned with Diabetes Prevention. The goal of this proposal is to provide suggestions to improve nutrition standards of meals served in Hawaii public schools that are economically and culturally sensitive. A literature review will provide information regarding Diabetes prevention and current nutrition standards associated with school lunches, in order to provide a general standard of foods that should be served in schools. A field study will also be performed to determine areas of improvement needed in Hawaii public schools. With the information gathered, a list of large, long term and small, manageable goals, and methods to obtain such goals, will be drawn. The hopeful impact will be to provide nutritious meals to students in Hawaii public schools, especially those who receive most or all of their meals through federally funded meal programs, which are aligned with the proper nutrition expected to help prevent diabetes.

Rebecca Dew  
English  
Project Proposal  
Arts & Humanities  
Honors Program  
Oral and Poster Presentation  
8:45am - Mandarin Room

Morality & Mortality: The Interplay of God and Human Nature in The Brothers  
Karamazov

Fyodor Dostoevsky's *The Brothers Karamazov* is considered by many philosophers and literary experts to be among the most influential achievements in 20th century Russian literature. Dostoevsky's insightful depictions of religious and ethical questions are relevant to an understanding of the impact religion, particularly Eastern Orthodox Christianity, has had on the development of modern philosophical thought. Contrary to the bulk of research submitted on Dostoevsky's work, my efforts to better understand the influence of this novel will be directed in exploring how Dostoevsky portrays human nature through the lives of the four brothers in *The Brothers Karamazov* in comparison to his representation of the nature of God. I will also incorporate the philosophical works of Nietzsche and Sartre in my inquiry. I will associate how one's definition of God reveals human nature, with an application to the existence of evil, and man's responsibility to both God and the world. It is my hope that my research will uncover a meaningful answer to the question posed by Ivan Karamazov and essentially by each and every one of us: "If God exists, why is there so much evil and suffering in the world?" Perhaps the essential question is whether the evil and suffering in the world exposes the very nature of man.

Kristen Domingcil  
Apparel Product Design and Merchandising  
Completed Project  
Social Sciences  
Undergraduate Research Grant  
Poster Presentation

### Natural Dyes from Invasive Plants for Hawaii's Sustainable Environment

In recent years, the fashion industry introduced and promoted a number of new products that were labeled as eco-conscious, renewable, and sustainable. Many of these products incorporated the use of natural dyes, made from naturally derived materials, rather than chemically processed substances. But are natural dyes comparable to synthetic dyes, and could they be a profitable product for manufacture in Hawaii? In this research, dyes made from abundant, invasive species (*Cassipouira equisetifolia*, *Clidemia hirta*, *Hibiscus rosa-sinensis*, *Lantana camara*, *Psidium cattleianum*, and *Spathodea campanulata*) were tested against a commercial dye (Rit brand) using American Association of Textile Chemists and Colorists (AATCC) standardized test methods for colorfastness and wrinkle recovery. A paper chromatography test was also used to determine if dye molecule size was a factor in how fast the dye was absorbed into the samples. Results revealed that samples dyed with natural dyes had higher scores for colorfastness, and in general had a higher wrinkle-recovery score than Rit dyed samples. Chromatography also revealed that dyes made from *Hibiscus rosa-sinensis* and *Spathodea campanulata* had the highest R<sub>f</sub> values of all the natural dyes, however, Rit brand dye had the highest R<sub>f</sub> value of all the dyes. Therefore, while natural dyes are revealed to be a good alternative to dyeing with synthetic dyes, more research needs to be completed in order to produce dyes for commercial use, as natural dyes are less easily absorbed than dyes made with synthetic compounds.

Mentor: Shu-Hwa Lin

Carrie Downing-Larick  
French  
Completed Project  
Arts & Humanities  
Honors Program  
Oral and Poster Presentation  
9:00am - Tagore Room

### Homosexuality: A Blending of Science and Literature

In 1869 Karoly Maria Benkert a Hungarian writer coined the term “homosexuality” differentiating it from his other terms “heterosexuality” and “monosexuality” (masturbation) in a paper advocating for homosexual rights. It wasn’t until 1907 that the term was used in the United States, and yet there has been an incredible amount of time and energy devoted to this word over the past 104 years. Homosexuality is a very hot topic science with a wealth of knowledge spilling out from a variety of sources such as psychoanalysis by Freud (e.g. 1905, 1922), sexuality scale by Kinsey (e.g. 1948, 1953), “gay gene” research by Hamer (e.g. 1993), evolutionary perspectives by Sommer and Vasey (e.g. 2006), and many more. Yet same-sex relations have been acknowledged and discussed since writing was possible from the antiquities, ancient oriental texts, and religious documents. In more recent times Rabelais (e.g. 1532), Rousseau (e.g. 1754, 1782), Balzac (e.g. 1830), Foucault (e.g. 1976, 1984), and Céline (e.g.1936) have incorporated the idea of same-sex relations into their works. This research ties in aspects of arts and humanities as well as social and natural science in order to explore how homosexuality evolved in culture, literature, and science. It also investigates how science and literature compliment and combat the idea of homosexuality. Overall this study tries to bring awareness to the public about homosexuality and tries to break away from a structuralized and analytical view for a more complete image of sexuality.

Mentor: Marie-Christine Garneau

Marlee Elston  
B.S. Biology  
Project Proposal  
Natural Sciences  
Honors Program  
Oral and Poster Presentation  
11:30am - Pago Pago Room

### Improving the piggyBac Gene Transfer System

Currently, the field of gene therapy lacks effective non-viral tools to insert DNA into specific positions in the human genome. During my senior honors thesis I will work on continuing to refine the piggyBac transposase based gene transfer system built by the team at the Institute for Biogenesis Research. I will be working with Dr. Johann Urschitz in the lab of Dr. Stephan Moisyadi. These new DNA based tools are being designed to consistently insert new genes in specific locations on mammalian chromosomes. The tools will be built from circular DNA referred to as plasmids or vectors. The sets of tools we are currently working on use a DNA section coding for a transposase enzyme that has the ability to cut DNA out of our vector and paste it into the chromosomal DNA of the chosen cell.

Current non-viral gene therapy vectors deliver genes to random locations on the chromosomes, which poses the risk of eliminating useful genes or possibly causing cancers. The way in which we intend to combat this problem of random insertion is with the addition of zinc finger sequences, which will guide the new genes into a position we can select on one of the chromosomes. With the addition of these new components our vector will have the ability to insert genes into specific locations on human chromosomes. This will continue to open up new possibilities from treating inherited diseases to cancers.

Mentor: Johann Urschitz

Brady Evans

Bachelor of Fine Arts - Department of Art and Art History, (area of specialization-  
drawing)

Project Proposal

Arts & Humanities

Honors Program

Oral and Poster Presentation

9:00am - Mandarin Room

### Drawing from the Sublime

Imagine for a second, you're traveling through a deep forest and for hours and hours you are looking at nothing but trees. Suddenly, you come upon a clearing and laid out in front of you is a stunning landscape. You're overcome and somewhat terrified at just how enormous and overpowering nature can be, taking you into another realm of realization. 18th century West European philosophers called this the 'sublime,' an aesthetic philosophy often used to describe dramatic and carefully rendered landscape painting. The sublime, though having been developed in the West, is treated as a universal definition. However, I've noticed Zen Buddhism tells of an awakening experience similar to the sublime. Instead of a grand, detailed landscape, Japanese Zen in particular, uses simple ink brush strokes, everyday subject matter and humor to guide their students into a new state of awareness. It is under the guise of this contrast in expression that I hope to create an exhibition of drawings and installation artwork. Not wanting to draw from any grandiose natural depictions I will concentrate on revealing the sublime in the everyday and often overlooked parts of nature. I hope the viewer will find something spiritual in seemingly mundane occurrences that usually go unnoticed.

Rissa Fedora (Partner of Tyler Law)  
Biology and Mathematics  
Work in Progress  
Natural Sciences  
Undergraduate Biology and Mathematics Program (UBM)  
Oral Presentation  
9:00am - Sarimanok Room

### Diffusible Proteins in a Filamentous Cyanobacteria

Anabaena is a filamentous cyanobacteria that forms terminally differentiated heterocysts at regular intervals in fixed-nitrogen starved conditions. The heterocysts, which form approximately every 10 cells, act as a site for nitrogen fixation. During nitrogen starvation, the amount of HetR, master regulator for heterocyst differentiation, accumulates until it reaches a critical concentration within a single cell that will differentiate into a heterocyst. The process of accumulation is tightly regulated so that the 1 in 10 pattern will form. One of the inhibitors is PatS, a 17 amino acid peptide which is produced in vegetative cells and diffuses along the filament. PatS's functional domain is a C-terminus RGSGR motif which deactivates HetR. This ongoing study examines which amino acids are required in order for PatS to diffuse outside of Anabaena, and pass across the filament to inhibit HetR in neighboring cells. In a  $\Delta patS$  strain, HetR will accumulate in high concentrations and form much more frequent heterocysts. By conjugating a plasmid containing truncated versions of PatS into a  $\Delta patS$  strain, we will visualize if the different sized PatS's are leaving the vegetative cell, or are unable to diffuse, thus identifying the amino-acids required for PatS to diffuse and carry out its function. Additionally, work is being carried out on visualizing the growth of a single filament of Anabaena, which has a doubling time of 12 hours, in order to improve existing mathematical models of Anabaena.

Mentor: Dr. Sean Callahan

Bali Fergusson  
Religion  
Work in Progress  
Arts & Humanities  
Honors Program  
Oral and Poster Presentation  
11:45am - Tagore Room

### Atheism and the Asura: A unifying theory of "Proto-Indo-European-Religion"?

In a field complicated by historical roots in 19<sup>th</sup> century colonialist scholarly justifications for imperial conquest, scholarship on 'proto-indo-european-religion' despite acknowledging strong commonalities and cognates between indo-european-languages and religions, remains over-reliant on speculative theorizing without adequately coherent explanation of the similarities and differences such as the Asura-Ahur-Aesir cognates. This thesis will examine the meaning of the recurring notion of "Asura" in Indo-European-Cultures, by employing a "cultural-meta-narrative" to show a unifying centrality from India to Iran to Scandinavi without recourse to a prototypical imagined ancestor, more coherently than current theories arguably originating in both Neo & Post Nationalistic dialects. A theoretical interpretative model drawing on the Vedic and arguably the proto-indo-european-religion's traditional internal dating of history from the texts such as the Mahabhrata and Bhagavata Purana, can contextualize the geo-political and religious usage of the term 'Asura,' and provide an ockams-razor-esque simplicity or explanation to revolutionize the understanding of Proto-Indo-European religious history.

Key Words: Proto-Indo-European, Religious History, Asura, Vedic

Mentor: Ramdas Lamb

Nicholas Griffith  
Mathematics and Marine Biology  
Work in Progress  
Natural Sciences  
Undergraduate Biology and Mathematics Program (UBM)  
Oral and Poster Presentation  
9:00am - Kaniela Room

### Tracking Coral Through Time: The Mathematics of Coral Life Histories

With increased carbon emissions leading to ocean acidification, coral colonies remain a subject in which accurate data is most urgently needed. Though corals create the ecological backbone of reefs worldwide, tracking their multitudinous growth and form proves daunting. Coral colonies have complex life histories including fusion, fission, recruitment, death or any combination thereof. It is precisely these complexities of life history that turn any attempt at population dynamics into a particular challenge. Here we analyze photoquadrats from five years at various sites surrounding Maui (Hawaii, USA) and use mathematical models to convey life history data for *Porites lobata*, *Porites compressa*, *Montipora capitata*, *Montipora patula* and *Pocillopora meandrina*, respectively. Within each site, a total of five photoquadrats are permanently marked to ensure site relocation so that coral colony fates can be tracked annually. Matrix models have been employed in previous studies of coral population dynamics, though they fail to account for continuous spatial dimensions. Integral projection models (IPMs) have been used to quantify life histories of various species in a multitude of ecosystems, though to the best of our knowledge no one has ever applied them to coral reefs. Specifically, integral projection models allow us to follow populations through discrete time while mapping their continuous spatial dimensions. Although we discuss the use of integral projection models solely in relation to coral colonies, the work is just as relevant within many other ecological contexts.

Mentor: Anne Castelfranco & Megan Donahue

Rin Hayashi  
Mechanical Engineering  
Project Proposal  
Natural Sciences  
Honors Program  
Oral and Poster Presentation  
11:45am - Pago Pago Room

### Control Methods Applied to the Linear Flexible Joint Inverted Pendulum

Any device that operates automatically will use some kind of control method so that it will function properly. Simple devices, such as washing machines and ovens, to advance devices, such as robots and aircrafts, all needs to work properly or else it could be a problem or even be dangerous. There are many control method that can be used, however, it is sometimes difficult to see how this method affect the device's behavior differently or better than other methods and also to give reasons why this method should be used. For this proposed project I will be using different control methods on a device called the Linear Flexible Joint Inverted Pendulum and look at how it affected the behavior of the device and evaluate their performances. I will be using books on control theories and studies done on similar devices to understand the different control method that I will be using. I will also be using manuals to set-up the device and manuals for the program that I will be using on the computer.

Alan Herbert (Aish)  
Philosophy  
Completed Project  
Arts & Humanities  
Honors Program  
Oral and Poster Presentation  
12:00pm - Tagore Room

### A Paradox in the Name of God

This thesis is on the philosophical problems of naming God. In most theistic religions, the name of God (or the thousand names of God, etc.) has both a ritual-practical as well as a mystical-speculative importance. The central puzzle I address arises out of a tendency, in a large number of (Hindu and Judeo-Christian) believers, on the one hand, to regard God to be inaccessible by any word (God is unnamable) and, on the other hand, to take the name or names of God to be so close to divine nature that God and His name are considered identical. I approach this paradox from the perspectives of the Indian and Western philosophical traditions and through them try to distinguish the status, reference and meaning (cognitive significance) of proper names and common names of God as well as the possible resolution or sustenance of paradoxes.

Mentor: Prof. Arindam Chakrabarti

Kara Hisatake  
English  
Completed Project  
Arts & Humanities  
Honors Program  
Oral and Poster Presentation  
9:15am - Tagore Room

"Nothing Says I Despise You Like a Blowjob": Opening Queer Moments for Queer Spaces  
in Harry Potter Slash Fan Fiction

My project focuses on slash fan fiction, which are narratives written by fans that place two male characters in a homoerotic relationship and then posted online. I concentrate on Harry/Draco (H/D) slash fan fiction, based on the popular Harry Potter series, and analyze two primary pieces of slash fan fiction. The conceptual framework for this project is informed by Rene Girard, Roland Barthes, Eve Kosofsky Sedgwick, and Judith Butler, connecting slash fan fiction and queer reader responses to dominant heteronormative media. In reading queerly or through a non-normative lens, fans see "queer moments" in popular media expose the erotic potential of male homosocial bonds. These bonds, normally viewed as friendship or rivalry, are transformed into homoerotic bonds. Comparing J. K. Rowling's series with two pieces of H/D slash fan fiction, my close readings reveal the parallels between them and the fantasies slash fan fiction brings further into reality. Furthermore, I argue that slash fans are creating a unique queer space that validates the existence of marginalized voices, especially against the heteronormative and often homophobic critique that such expressions of sexuality are "degrading." Although the slash community mostly exists in an anonymous online setting, most fans identify as women, as queer, or even as people whose desires are not addressed in dominant media. In slash fiction, aspects of gender and sexuality usually ignored or denied a legitimate place may be claimed and celebrated.

Mentor: Professor John Zuern

Danielle Kiele Hoen  
Global Environmental Science  
Work in Progress  
Natural Sciences  
Global Environmental Science  
Oral and Poster Presentation  
9:15am - Kaniela Room

### Determining the Trophic Position of Five Deepwater Hawaiian Fish Species

Determining trophic relationships provides an important basis for any ecosystem-oriented fisheries management strategy. However, few large scale studies have been conducted in Hawaii. Stomach content analyses are problematic due to regurgitation and stomach eversion. Bulk isotopic analysis, complicated by source  $\delta^{15}\text{N}$ , is occasionally unsatisfactory as well. I characterized the trophic position of five deepwater fish species – ehu (*Etelis carbunculus*), hapu'upu'u (*Epinephelus quernus*), onaga (*Etelis coruscans*), opakapaka (*Epinephelus quernus*), and uku (*Aprion virescens*) – through compound specific stable Nitrogen isotope analysis of specific amino acids (AAs) in white muscle tissue. The AA phenylalanine retains the  $\delta^{15}\text{N}$  value of nitrogen at the base of the food web while glutamic acid becomes enriched in  $^{15}\text{N}$  with each trophic level. Only mature specimens were analyzed, so ontogenetic shifts were not considered. My work is part of a larger effort to understand diet relationships among Hawaii's fisheries species. Previous studies as well as bulk isotopic data indicate ehu, onaga, and uku are primarily piscivores, hapu'upu'u are benthic carnivores, and opakapaka are macroplanktivores. I expect my analyses to support these previous findings.

Mentor: Brian Popp

Kelsea Hosoda  
Biology and Hawaiian Language  
Project Proposal  
Arts & Humanities  
Honors Program  
Oral and Poster Presentation  
11:30am - Mandarin Room

### E Kūkulu Kākou i ka Lolouila: Let's Build a Computer

History has shown the growing separation between Hawaiians and their culture. The use of technologies has allowed native Hawaiians to maintain and revive their culture, and inherently their language. Hawaiian immersion schools are arguably the most essential aspect of the cultural resurgence. These schools are epicenters where students can learn the native Hawaiian culture and language. However, indigenous based education systems, including Hawaiian immersion schools, have created a disconnect from computers and technology due to inadequate knowledge of both areas. Is possible for high school level Hawaiian immersions students, from Ānuenue and Kamakau, to successfully build a computer and use Excel through a curriculum completely in the Hawaiian language? The implementation of curriculum on how to build a computer as well as how to use Excel in the Hawaiian language will teach Hawaiian immersion students to construct a computer, provide them with the basic skills necessary to operate the computers, and possibly spark the interest of the students in computer science.

Mentor: Ken Hayes and Robert Cowie

Kelsey Inouye  
English, Psychology  
Completed Project  
Arts & Humanities  
Honors Program  
Oral and Poster Presentation  
9:30am - Tagore Room

### Performing & Constructing Identity in Anorexia Memoir

Since the late 1970s, anorexia memoirs have been published at an increasing rate, with at least 37 new volumes appearing in the past decade. While there has been much research on the medical, religious, and sociocultural aspects of the disorder, this project focuses on the role that the language of memoir plays in the course of the illness, particularly during the recovery process as represented in a selection of narrative accounts. Focusing on four published anorexia memoirs—*Solitaire* (1979) by Aimee Liu, *Wasted* (1998) by Marya Hornbacher, *Biting Anorexia* (2008) by Lucy Howard-Taylor, and *My Life as a Male Anorexic* (1996) by Michael Krasnow—I will explore the development of narrative identity and how the distance between narrator and author affects the way anorexia is portrayed, finally touching on the ethical issues of reading and writing anorexia memoir. Ultimately, I will argue that finding language to express the anorexic experience and construct an identity can aid the writer in the process of redefining the self; thus the memoir represents a stage in the authors' ongoing journey towards recovery.

Mentor: Miriam Fuchs

Jennifer Ishimoto  
Biology  
Completed Project  
Natural Sciences  
Honors Program  
Oral and Poster Presentation  
9:15am - Sarimanok Room

#### Degradation of pyrene by *Mycobacterium* species: single versus consortia

Many polycyclic aromatic hydrocarbons (PAHs), a result of incomplete combustion of organic materials, are known to be a toxic, carcinogenic, and mutagenic. These pollutants are known to affect organisms including humans and are currently listed as a major environmental contaminant in the United States and surrounding territories. Biodegradation researches are being done using microorganisms to degrade these materials to safer compounds. *Mycobacterium* species *M. crocinum* czh-3, *M. rutilum* czh-117, and *M. gilvum* czh-101 are known to degrade PAH, pyrene. There have been studies using these strains to observe degradation of various PAHs and their mixtures, but none to see how bacteria consortia would effect a single PAH's degradation. Faster degradation was assumed; to address this question, bacteria degradation individually and when used in consortia were compared. Through the use of in vitro culturing methods, high-pressure liquid chromatography (HPLC), and mass spectrometry, the amount of growth and the amount of PAH degradation were monitored. The data were used to determine the synergistic/antagonistic effects of the bacteria. Our future goal is to use bioaugmentation, the introduction of bacteria in the contaminated soil, to see the works of the *Mycobacterium* species outside of the test tubes. Keywords: Pyrene; Polycyclic aromatic hydrocarbons (PAHs); Biodegradation; Consortia; *Mycobacterium* species.

Mentor: Dr. Wenfeng Chen and Dr. Qing Li

La'Toya I. James  
Biology  
Project Proposal  
Natural Sciences  
Honors Program  
Oral and Poster Presentation  
12:00pm - Pago Pago Room

### Ecology of *Vibrio parahaemolyticus*: Potential pathogenicity within the Ala Wai Canal

The Ala Wai Canal of Oahu, Hawaii is home to a diverse group of microorganisms, some of which have the potential to cause disease in humans. *Vibrio parahaemolyticus* is one of the bacterial species that grows naturally in the estuarine waters of the canal. This opportunistic pathogen is a common cause of food-borne illnesses worldwide, but can also cause wound infections and septicemia. Although past studies have shown that not all strains of this species are pathogenic, most studies have been conducted in temperate regions and there is little data for the habitats found within tropical/subtropical habitats such as that of Hawaii. Several molecular markers including *tdh* (thermostable direct hemolysin) genes, *tlh* (thermolabile hemolysin) genes and ORF-8 (open reading frame-8) have been found to be associated with the more virulent strains of *V. parahaemolyticus*. My objectives include determining how environmental conditions influence the abundance of *V. parahaemolyticus* within the Ala Wai Canal of Oahu, HI and to determine what proportion of the population carry virulence-associated genes. Water samples and a suite of environmental data were collected from various sites along the length of the canal over the course of a year at frequencies ranging from every three hours to once a month.. Over 200 isolates have now been purified and extracted and PCR analyses are underway. The goal of this study is to provide a predictive model of the abundance of virulent *V. parahaemolyticus* based on environmental conditions. This model will be used to determine when and where virulent *V. parahaemolyticus* are most abundant and therefore pose the greatest risk of infection.

Mentor: Dr. Grieg Steward

Mai Kawahara  
Music  
Project Proposal  
Arts & Humanities  
Honors Program  
Oral and Poster Presentation  
11:45am - Mandarin Room

### Music Performance Anxiety

Enjoying music is one of the popular forms of relaxation for many people. Listening, performing on musical instruments or singing, etc, are all viable options when looking for a way to relax. However, performing music in front of people, or at certain occasions such as an audition and competition, will give performers stress and anxiety. No matter how numerous amounts of practice time performers invest in order to have a successful performance, the majority of them end up experiencing anxiety and stage fright. Memory slips, dry mouth, sweating, blushing and muscular tensions are a just couple of examples of anxiety symptoms. They need to be recognized and to be controlled in order to have a great performance for musicians. This research will identify the causes and symptoms of performance anxiety and will include the solutions of how to reduce or control them. As one of the experiments to find the solutions, I will learn how to control my body and breathing through Yoga for six weeks during the summer, 2011. In order to find out how Yoga will work for performers to reduce anxiety, I will teach what I learned in the summer to two or three students who major in music at the University of Hawaii at Manoa during the fall semester of 2011. The training will last for six weeks and afterward I will interview them after they have completed their performances to gage whether or not my training with Yoga was affective.

Jin Woo Kim  
Biology  
Work in Progress  
Natural Science  
Honors Program  
Poster Participation

### Genetic Variation In An Invasive Species: Strawberry Guava

Strawberry Guava (SG) is an invasive complex of species that is endangering Hawaiian native forests. My project's objective was to examine the genetic variation within SG in order to evaluate the feasibility of applying biological control methods. Specifically, I am trying to determine whether SG reproduces clonally, resulting in genetically uniform progeny, or whether it reproduces sexually, resulting in genetically variable progeny. I grew seedling progenies of the three different types of SG, *Psidium lucidum*, *P. cattleianum* and *P. littorale*, and compared the DNA microsatellite (SSR) genotypes of the progenies with those of the parents to detect any sexual recombination events. To date, two different SSR primer pairs have been employed to analyze variation in progenies of *P. cattleianum* and *P. littorale*. These clearly differentiated the seedling progenies of the different species, but failed to detect any variation within seedling progenies of the same species. This result could indicate asexual apomictic seed production in the two species, or it could simply be due to inadequate sampling of the genomic variation. Further research will increase the SSR primer pairs to four and include all three of the SG species. The SSR result will help guide ongoing biocontrol efforts. Presumably, the less genetic variation that appears in SG populations, the more likely it is that a single bio-control agent may be effective in controlling its spread.

Mentor: Richard Manshardt

Liana Kobayashi  
Psychology and Biology  
Work in Progress  
Social Sciences  
Honors program  
Oral and Poster Presentation  
11:45am - Sarimanok Room

### Buying Alcohol Illegally – Does Gender Matter?

In the United States, the Minimum Legal Drinking Age (MLDA) is 21 years of age, making it illegal for those under 21 to purchase or possess alcohol. However, of the illegal alcohol sales that are successful, college students may believe that underage females can more successfully purchase alcohol in retail establishments than males. Online surveys assessing UH college students' (n =175) knowledge and attitudes about a potential gender bias related to the ease of underage adults' purchasing alcohol were completed. A majority of the sample was female (73.1%) with many being of Asian (41.7%) or Native Hawaiian/Pacific Islander (11.4%) ethnicity. The mean age was 21.3 ( $\pm 3.0$ ) years. Statistically more respondents (57.7%) believe it is easier for underage females than males to buy alcohol from restaurants/bars/ clubs; whereas only 31.4% ( $p < .0001$ ) believe it is easier for underage females than males to purchase alcohol from retail stores. When the response to the "gender bias in ease of buying alcohol" question was divided by respondents' gender, however, there was no statistical difference by venue. Objective field data that documents sales of alcohol to minors in Hawaii has showed that more sales were made to underage males in retail stores, whereas there was no difference by gender in sales of alcohol in restaurants/bars/clubs. When comparing perception to objective data in restaurants, bars, and clubs, the college students' perceptions were incorrect. However, objective data for retail matched college students' perceptions that females were not more successful at purchasing alcohol than males.

Mentor: Dr. Cheryl Albright, PhD, MPH

Anna Koethe  
Communications and Political Science  
Project Proposal  
Social Sciences  
Honors Program  
Oral and Poster Presentation  
9:15am - Pago Pago Room

### Measuring the effectiveness of the Hawai'i Meth Project as an anti-drug campaign

Methamphetamine, also known as crystal meth or ice, is one of the most harmful drugs and is Hawai'i's number one drug problem. Over the years, crystal meth abuse has been more and more prominent among Hawai'i's criminals, and more unfortunately, its youth. In order to lower the use of methamphetamine among Hawai'i's youth, the Hawai'i Meth Project was put into place in June 2009. It was adopted from the Meth Project, which was originally the Montana Meth Project. This anti-drug campaign received national recognition and was said to be the main force in driving down crystal meth usage in Montana. Running an anti-drug campaign is equivalent to running a public relations campaign, in that a party is trying to convince or sway a specific public. In this case, the Hawai'i Meth Project is trying to convince teenagers and young adults that abusing methamphetamines is detrimental to their lives and futures. There has been a great deal of literature published that claims that the Montana Meth Project was actually ineffective in the long run. In this project, I will attempt to analyze the effectiveness of the Hawai'i Meth Project on young adults in Hawai'i.

In order to figure out whether or not the Hawai'i Meth Project was an effective anti-drug campaign, it will be necessary to review all aspects of the campaign and look at the hard numbers containing advertisement equivalency and impressions. An analysis needs to be done on the communication strategies used, such as fear appeals and tactics, and it needs to be determined whether this is an effective means of communicating with the audience. Data will be collected from local middle and high schools to measure the perceived effectiveness of the campaign by using surveys as well as focus groups. In order to gain a different perspective, interviews will be conducted with emergency room nurses and local police officers, who deal with meth users first hand. In addition to this, a review of online conversations taking place will also be taken into account to measure the attitudes of the community at large.

Nikola-Maria K.Komailevuka  
Economics  
Project Proposal  
Social Sciences  
Honors Program  
Oral and Poster Presentation  
9:30am - Pago Pago Room

### Globalization through Trade Liberalization in the Pacific: PACER & Fiji

Globalization has been the catalyst behind the concept of trade liberalization. The idea has taken root in many parts of the world. The Republic of the Fiji Islands has responded positively to global trade liberalization as evidenced in its agreement to join the World Trade Organization (WTO). Membership with WTO dictates a gradual decrease in tariff rates to required levels. To add to this, in recent years the island economy has engaged in negotiations to construct a free trade area in the Pacific region, primarily, between member countries of the Pacific Islands Forum Secretariat (PIFS). This is the leading political and economic regional institution in the Pacific. Its members span 16 economies. This proposal addresses the crux and outline of research methods on the implications of trade liberalization for the Fijian economy. It outlines the concepts of and relationship between globalization and trade liberalization. In addition to this, it will highlight Fiji's economic trade history with Forum Island members and sets forth directions of further research into the possible quantification of threats and prospects that may arise out of the implementation of a free trade agreement such as the Pacific Agreement on Closer Economic Relations for the Fijian economy.

Youngsu Cho Kwon  
Biology  
Work in Progress  
Natural Sciences  
Honors Program & Undergraduate Biology and Mathematics Program (UBM)  
Oral and Poster Presentation  
9:30am - Sarimanok Room

Mathematical model to analyze the role of the extracellular matrix structures fractones in morphogenesis during brain development.

Investigating the mechanism that controls brain morphogenesis during development could lead understanding the etiology of growing brain diseases, including some forms of mental retardation, epilepsy, schizophrenia, and autism. As the mammalian brain develops, newly proliferated cells travel from their place of origin to different brain regions. The novel extracellular matrix (ECM) structures called fractones are found in the lateral ventricle walls, the principal adult brain stem cell niche. By electron microscopy, fractones were shown to contact neural stem and progenitor cells (NSPC), suggesting a role in neurogenesis. Preliminary research investigated spatial relationships between proliferating NSPC and fractones and identified basic components and the first function of fractones. Cell divisions are systemically associated with the fractone throughout the development and adult brain except certain period of embryo development. To investigate the relationships between fractones and cell proliferation during developmental stages, we inspected the distribution of fractones and cell proliferation in mouse embryos from stage E8 to E 14.5. The distribution of fractone was noticeably varied from each stage and the location in the brain. While in earlier embryo stages up to E8, E9 tend to have massive fractones spreading throughout the embryos, on the other hand, after E 14.5, fractones decreased in number and located in the subventricular zone. This indicates the role of fractones is maybe closely related to morphogenesis in developing brain. To validate this hypothesis, we are also developing and analyzing a mathematical model predicting cell proliferation from the spatial distribution of fractones in a developing mouse. Our approach is to use an affine control system to model the sequence of morphogenic events, the control depicting the spatial distribution of the active fractones, is innovative compared to the more common reaction-diffusion models seen in the literature on morphogenesis; however it is not that surprising. Indeed, control theory is instrumental to overcome many challenges faced by scientists to design systems with a very high degree of complexity and interaction with the environment. The project is supported by National Science Foundation, grant # 0634624.

Mentor: Dr. Frederic Mercier, Dr. Monique Chyba

Tyler Law  
Biology, Mathematics  
Work in Progress  
Natural Sciences  
Undergraduate Biology and Mathematics Program (UBM)  
Oral Presentation  
9:00am - Sarimanok Room

### Diffusible Proteins in a Filamentous Cyanobacteria

Anabaena is a filamentous cyanobacteria that forms terminally differentiated heterocysts at regular intervals in fixed-nitrogen starved conditions. The heterocysts, which form approximately every 10 cells, act as a site for nitrogen fixation. During nitrogen starvation, the amount of HetR, master regulator for heterocyst differentiation, accumulates until it reaches a critical concentration within a single cell that will differentiate into a heterocyst. The process of accumulation is tightly regulated so that the 1 in 10 pattern will form. One of the inhibitors is PatS, a 17 amino acid peptide which is produced in vegetative cells and diffuses along the filament. PatS's functional domain is a C-terminus RGSGR motif which deactivates HetR. This ongoing study examines which amino acids are required in order for PatS to diffuse outside of Anabaena, and pass across the filament to inhibit HetR in neighboring cells. In a  $\Delta patS$  strain, HetR will accumulate in high concentrations and form much more frequent heterocysts. By conjugating a plasmid containing truncated versions of PatS into a  $\Delta patS$  strain, we will visualize if the different sized PatS's are leaving the vegetative cell, or are unable to diffuse, thus identifying the amino-acids required for PatS to diffuse and carry out its function. Additionally, work is being carried out on visualizing the growth of a single filament of Anabaena, which has a doubling time of 12 hours, in order to improve existing mathematical models of Anabaena

Mentor: Dr. Sean Callahan

Amanda Lee  
Microbiology  
Completed Project  
Natural Sciences  
Honors Program  
Oral and Poster Presentation  
11:45am - Kaniela Room

Insights into the mechanistic basis of the Irukandji syndrome by evaluating the  
hematologic and immunologic responses in whole blood

The Hawaiian Box jellyfish, *Alatina mordens* (previously classified as *Carybdea alata*), aggregates on certain lee shores of Oahu 7-10 days after each full moon. This animal's appearance and the composition of its venom present areas of interest for the tourism industry and local beachgoers because of the painful stings they inflict. This stinging capability is mediated by potent venom, which contains pore-forming proteins (porins) that are introduced into the blood stream of the sting victim through thousands of stinging cell tubules that pierce the skin tissue. The venom porins assemble to create large pores in the membrane of the blood cells and cause the release of molecules from the cell. The molecules released from cells can illicit a variety of symptoms that include, the life threatening, Irukandji syndrome. Irukandji syndrome is a constellation of clinical symptoms characterized by hypertension, nausea, headaches, and cardiac failure after envenomation by several Cubozoan species including *Carukia barnesi* and *Alatina mordens*. Venom exposure leads to morphologic changes in white blood cells, increased plasma catecholamine levels, and a release of various cytokines, "cytokine storm", in blood. Catecholamines play a central role in the central nervous system and are responsible for flight or fight responses, while cytokines are cell-signaling molecules that fine tune regulation. This study is aimed at elucidating the molecular mechanistic basis of Irukandji Syndrome by characterizing catecholamine and cytokine responses in human blood.

Mentor: Angel Yanagihara

Karleanne Matthews  
English, Dance  
Project Proposal  
Arts & Humanities  
Honors Program  
Oral and Poster Presentation  
9:30am - Mandarin Room

### Structured Fantasy: The American Tall Tale in Children's Literature

This project proposes to contrast the structures of fantasy in the American tall tale and "tall tale" children's literature in order to draw conclusions about their social functions. In the 19th century, the American tall tale emerged as a popular genre of humor; however, the tall tale also served social functions in its original context. In the 19th century tall tale, fantasy in the narrative is incorporated in a structure that begins with a plausible premise, but slowly tests the audience's willingness to believe with the introduction of implausible details. The narrator's manipulation allows him to exercise control over an unpredictable landscape, and the audience's response to this tension serves a social function by identifying them as members or outsiders of the community. In contrast, although contemporary "tall tale" children's literature incorporates superficial elements of the American tall tale, the use of fantasy is not structured so as to create tension between the plausible and the implausible. Instead, the literature contains elements that excuse the reader from determining when the tale's plausibility has been stretched too far.

In order to examine these contrasting uses of fantasy, I will draw examples from 19th century printed tales and oral tales recorded by folklorists. These will be compared to children's literature that claims, in either content or marketing, a connection to the tall tale tradition. By examining the shifting use of fantasy in these works, I will trace the varying social function of the tradition in its historical and contemporary contexts.

Mentor: James Caron

Kimberley Mayfield  
Global Environmental Science  
Completed Project  
Natural Sciences  
Undergraduate Research Grant  
Poster Presentation

The effects of naturally occurring estuarine impoundment on the turbidity, nutrient, and chlorophyll levels: Lawai and Waipa streams as case studies

Many streams on Kauai have naturally occurring sandbars that form at their mouths and cut the stream off from the ocean. The longer the sandbar exists, the larger and dirtier the resulting estuarine impoundment appears to get. When the sandbar breaks, due to very high tides, extreme waves, heavy rainfall and rising stream levels, or any combination of those, the estuary's nutrients and turbidity flows out to the ocean and the estuary appears to become cleaner. A summer study (summer, 2010) was conducted to determine the quantitative effects of this estuarine impoundment on nutrients that are key for plankton growth, turbidity, and chlorophyll (which served as an indicator for phytoplankton productivity levels). The two streams that were chosen as study sites are on opposite sides of the island and have different upstream land uses, which provided a contrast in baseline water quality levels.

Mentor: Jane Schoonmaker

John Cameron McClain  
English  
Project Proposal  
Arts & Humanities  
Honors Program  
Oral and Poster Presentation  
9:15am - Mandarin Room

### Ghosts, Robots and Things In-between: A Florilegium

This project reviews works in the classification of Speculative Fiction, specifically in the short-story format, by critically examining existing works of similar types, then presents a collection of short stories entitled Ghosts, Robots and Things In-between: A Florilegium, written by the author.

The Literature review and critique will focus on three commonly genres under the Speculative Fiction umbrella; Fantasy, Science Fiction and Horror / Paranormal, with a historical timeline drawn linking the story types across the history of literature. The focus of the review is to explore the often arbitrary and inaccurate nature of genre classification, as well as the in order to recast the discussion in terms of "Literature" versus "Escapism."

The anthology (substituting the world "Florilegium" in its place), illustrates a continuum of stories crossing the Speculative Fiction realm, with Science Fiction and Ghost stories bookending a selection of other Speculative Fiction stories inbetween. Research will focus in two directions; historical review of existing fiction in the genres and story-specific research.

Mentor: Rodney Morales

Joseph Mendez  
Accounting  
Project Proposal  
Social Sciences  
Honors Program  
Oral and Poster Presentation  
9:45am - Pago Pago Room

### A Meta-Analysis of the Techniques Used to Detect and Exploit the Finances of Criminal and Terrorist Organizations Within the United States

Follow The Money (FTM) operations, one of the many tools United States law enforcement and intelligence agencies use to counter criminal and terrorist threats, are designed to track and exploit the finances of illicit organizations. By tracking these finances the U.S. Government is able to gain intelligence regarding the organizations themselves. Then, exploiting this intelligence may ultimately lead to eliminating the criminal or terrorist threat. I propose to perform a meta-analysis of the U.S. Government's use of FTM operations in order to assess these operations' effectiveness in eliminating criminal and terrorist threats.

Data and existing analysis from three categories will be synthesized to create this assessment. The first category is the existing research of the Financial Action Task Force (FATF), the international body of governments dedicated to deterring money laundering and terrorist finance. The research and analysis the FATF has performed to create recommendations and guidelines for governments to deter illicit finance actions will create a baseline to analyze how effectively these same actions are detected and exploited. The second category of data will be interviews with field experts including, agents from the Department of Justice, IRS, and FBI. These interviews will provide first-hand knowledge of FTM operations as well as on-the-ground perspectives of their effectiveness. The third category is court cases, law reviews and congressional records addressing and analyzing the end result of FTM operations. These records will reveal the rate of success in exploiting these illicit finances. Combining these sources of information will create an overview of how U.S. government makes use of FTM operations and how effective the operations have been in eliminating threats. The wider implications of this project will be to identify any gaps in FTM operations and promote further research to correct.

Crystal K. Morton  
Anthropology  
Project Proposal  
Natural Sciences  
Honors Program & MARC  
Oral and Poster Presentation  
12:15pm - Pago Pago Room

### Ho'omalūō: Understanding the Origin of Native Hawaiian Conservation Practices

The islands of Hawaii are beyond unique. As one of the last island groups to be populated by flora and fauna as well as humans, they are home to hundreds of different species of birds, insects, fish, and other marine life found only within the 1,500 mile long chain of islands. Its first land inhabitants were most likely birds who through unlucky happenstance, were blown off course and out towards these lush uninhabited islands on the winds of hurricanes. Without any natural predators, and with the abundant flora as nourishment, these first settlers thrived and through the process of evolution, diverged into different species, filling niches within the Hawaiian ecosystem. However, upon the arrival of humans around 500 C.E., the native bird population has only been declining. It has been estimated that the native bird community lost an estimated 71 different species or subspecies prior to the arrival of Captain Cook in 1778, and another 24 have gone extinct since. But how does the reality, 71 extinct bird species, reconcile with known native Hawaiian conservationist practices? Through a multidisciplinary approach, I will endeavor to make a correlation between the pre-Hawaiian society bird extinctions and the Hawaiians ecological understanding of their environment with a focus on endemic birds.

Mentor: Rebecca L. Cann

Guteriano Nicolau Soares Neves  
Political Science  
Completed Project  
Social Sciences  
Undergraduate Research Grant  
Oral Presentation  
12:15pm - Sarimanok Room

### Assessing Timor-Leste's Petroleum Revenues Management

Global experiences with petroleum have provided lessons to Timor-Leste on how to manage its few natural resources. With a small population, Timor-Leste's natural resources can be a sufficient engine for Timor's development, provided they are wisely managed. Therefore, in 2005, Timor-Leste established a Petroleum Fund Law. Broadly the goal of this law is to minimize the resource curse related to the Petroleum industry. Five years later, one can argue that although the Petroleum Fund has provided Timor-Leste with fiscal stability and some mechanisms of transparency, the current state of development in Timor bears some features of the resource curse or the paradox of plenty. A high unemployment rate, a lack of non-oil economic development, and a wide gap between the rich and the poor as well as between rural and urban populations, are some of these features. This research project aims to discuss some of these problems. This research focuses on the establishment of the Petroleum Fund and its establishment. It includes the rationales behind its establishment, the roles of state and public institutions, and how it has helped Timor-Leste to avoid Resource Curse or Paradox of Plenty.

Mentor: Dr. Ehito Kimura

Kathy Nii  
History  
Completed Project  
Arts & Humanities  
Honors Program & Undergraduate Research Grant  
Oral and Poster Presentation  
9:45am - Tagore Room

### Freedom Songs: A Study of Bangladeshi Cultural Resistance

Despite the formidable amount of research on the creation of Bangladesh, very little is known about the role of Bengali cultural activists beyond a collective level. Historiography of the topic makes only scant mention of the cultural activists' role. Scholars tend to focus on themes such as the political motives for independence, the armed resistance, and the West Pakistan atrocities. Politics and political leaders may have been at the forefront of the push for secession but the cultural activists fostered the growth of the independence movement. The cultural resistance movement provided the core objectives for the creation of an independent Bangladesh: secularism and tolerance. This project enhances our understanding of the cultural movement through a case study of a specific group of activists called the Bangladesh Mukti Sangrami Shipi Sangstha (the Bangladesh Freedom Cultural Squad). The BMSS used music as their weapon in the struggle against West Pakistan. During the 1971 Liberation War, the BMSS traveled to refugee camps in order to sustain morale and spread political awareness. This project utilizes oral history to uncover material not previously available in the historiography of the topic. This study will contribute to a growing discourse of individualized perspectives on the creation of Bangladesh.

Mentor: Dr. Ned Bertz

Yuho Ono  
Biology, Pre-Medicine  
Completed Project  
Natural Sciences  
Honors Program  
Oral and Poster Presentation  
12:00pm - Kaniela Room

#### Antibacterial Activity of *Vibrio* sp. Strain OCN008 isolated from *Porites compressa*

Corals of Hawaii are rapidly declining due to increasing outbreaks of diseases. One such disease is Montipora White Syndrome (MWS) which is hypothesized to be induced by marine bacteria. This disease causes rapid tissue loss in *Montipora capitata*, one of the dominant scleractinian coral species of Kaneohe Bay, Oahu, Hawaii. *Vibrio* sp. strain OCN008 was isolated from *Porites compressa*, another dominant coral species of Kaneohe Bay, and was shown to inhibit the growth of three putative pathogens isolated from the coral mucus of MWS-affected *M. capitata*. OCN008 exhibited inhibitory activity on agar plate tests, including soft-agar overlay assays, culture droptests, and supernatant droptests. Inhibitory activity was also observed through growth curves of these putative pathogens incubated in conditioned liquid media made of 50% cell-free OCN008 supernatant and 50% GASW media. The antibacterial substance was not heat labile with a molecular weight less than 3kD. Significant pH changes were not observed as well, eliminating the possibility of inhibition caused by secretion of organic acids and hydrogen peroxide. The spectrum of inhibitory activity of this substance was also tested against various Gram-positive and Gram-negative bacteria, and was seen to inhibit the growths of *Bacillus megaterium*, *Bacillus subtilis*, *Micrococcus luteus*, and *Staphylococcus saprophyticus*, after 24 hours of incubation. Further investigations need to take place, including assessments for proteinaceous and solubility properties, for the isolation and identification of this antibacterial substance. Key Words: Antibacterial, coral disease, coral immunity, coral mucus, Montipora White Syndrome

Mentor: Sean Callahan

Monica Orcine  
Biology  
Completed Project  
Natural Sciences  
Honors Program  
Oral and Poster Presentation  
12:15pm - Kaniela Room

### Comparative study of histaminergic neurons in calanoid copepods

Calanoid copepods are abundant planktonic crustaceans that drift around the pelagic zone of the ocean. Despite being of major ecological importance in marine food webs their minute body sizes allow them to be easily overlooked, and hence their nervous systems are understudied. Recently, however, immunohistochemical techniques have been used to map the nervous system as well as some of its transmitter systems. With this approach, aminergic cells in one key species, *Calanus finmarchicus*, have previously been identified and provisionally mapped, but the mapping has been without the aid of a well-delineated nervous system labeled by the same technique. The number of aminergic cells found was small, opening the possibility that this approach could be used to make quantitative as well as qualitative comparisons of particular biogenic amine-containing cells across species. Because of the important position of copepods in crustacean phylogeny, such an approach might provide a convenient method for gaining insights into the evolution of the crustacean nervous system. To understand the evolutionary relationships within the copepod order Calanoida, histamine was used as a molecular marker, and the histaminergic cells were compared by characterizing their numbers, pairings, locations, and sizes between two species, *Calanus finmarchicus* and *Metridia lucens*, from different superfamilies. Using the techniques of immunohistochemistry and confocal microscopy, double labeling of the histaminergic cells against a contrastingly labeled nervous system enabled a better visualization and more accurate localization of the positions of these cells.

Mentor: Dr. Dan Hartline

Megan Oshiro  
English & Journalism  
Project Proposal  
Arts & Humanities  
Honors Program  
Oral and Poster Presentation  
12:00pm - Mandarin Room

### Construction of Identity of Okinawans in Hawaii and California

Hawaii is home to the largest population of Okinawans living outside of Okinawa. There are also many Okinawans concentrated in Southern California, particularly the South Bay region of Los Angeles. There is an extensive amount of literature concerning the Okinawan experience in Hawaii. However, not much literature exists regarding the Okinawan experience in the South Bay, despite the large number of Okinawans living there. This paper examines the development of Okinawan identity as Okinawans emigrated from Okinawa to Hawaii, as well as how the Okinawan culture has flourished in Hawaii. This paper also addresses the reasons as to why there is almost no literature about Okinawans in the South Bay. Some reasons include a limited amount of organized clubs focused on some aspect of Okinawan culture and also a lack of interest amongst the younger generations of Okinawans. If there no interest in preserving the Okinawan culture in the South bay, the distinct Okinawan identity will become extinct.

Tolly Powell  
Finance and International Business  
Work in Progress  
Social Sciences  
Honors Program  
Oral and Poster Presentation  
12:00pm - Washington Room

2011 Global Investment Research Challenge - KLA Tencor  
search Challenge - KLA Tencor

This abstract is an extension of the 2011 Global Investment Research challenge held in San Francisco, CA on March 4, 2011. The competition consists of three levels: regional, national and international. More than 100 teams from around the world will be competing. The competition includes: 1. Analysis of a Public Company Teams research a publicly traded company. Company management presents to the teams and participates in a Q&A session. 2. Mentoring By a Professional Research Analyst Each team works with an investment professional, who mentors the team on research process and reviews and critiques its report. 3. Writing a Research Report Each team produces an initiation of coverage report on its chosen company. The report is reviewed and scored by a group of judges. 4. Presentation of Research to a High-Profile Panel of Experts Teams present their research to a panel of experts from top financial institutions. The team with the highest combined report and presentation score is the winner. 5. Advancement to the CFA Institute Global Challenge The winners of local competitions advance to compete against teams within their geographic region, culminating in a global finale competition. Our subject company is KLA-Tencor (KLAC), a global semiconductor equipment manufacturer with a specialization in process control and yield management. As of 3.2.2011 this company had a market capitalization of \$8.28 Billion. We will recommend a 'Buy' rating based on our analysis and valuation of the firm to the panel of judges on 3/4/2011.

Mentor: Benjamin Bystrom

Whitney R. Reyes  
Botany  
Completed Project  
Natural Sciences  
CASSAS Funded Research  
Oral Presentation  
9:45am - Kaniela Room

### Restoration Management Techniques to Facilitate Growth of Out planted *Marsilea villosa*

*Marsilea villosa* ('ihi'ihii) is an endangered Hawaiian fern with only seven populations, all in ephemeral flooding drylands. Among its unique traits are long-lived sporocarps, a requirement of flood and drought to complete its sexual life cycle, and vegetative growth in absence of flood. Conservation of rare and endangered plants can be accomplished through outplanting, but ecological management is often required. A common garden experiment was performed to determine which restoration management techniques would facilitate growth of outplanted *M. villosa*. The following effects were tested in a split-plot factorial design: two flooding levels (once/none), two light levels (50% shade/full sun), two weeding levels (bi-monthly/none), and the interactions of these factors. Percent cover was measured for *M. villosa* and analyzed with ANOVA to determine if and how it changed in response to treatment combinations. Results showed that flooding had the most significant single-factor effect on increased *M. villosa* cover. Shade also increased cover over full sun when the plants began to experience drought. There was an interaction of light and flooding because *M. villosa* grew best in flooded, shaded plots. Weeding had no significant effect throughout the experiment. Beyond protected status, current in situ management of 'ihi'ihii populations consists entirely of weed management. The results of this study show that labor-intensive weeding may be unnecessary if reintroduced *M. villosa* is planted under conditions of flooding and moderate shade, and if planted at the start of a rainy season, will require minimal management to become a self-sustaining new population.

Mentor: Dr. Tom Ranker

Michelle-Yvette HC Rose  
English and History  
Work in Progress  
Arts & Humanities  
Honors Program  
Oral and Poster Presentation  
10:00am - Tagore Room

### Sir Thomas Malory, Rebel Writer Extraordinaire

Le Morte D'Arthur and its author have been both controversial and fascinating for centuries. Most academics point authorship toward a Sir Thomas Malory of Newbold Revel in Warwickshire of a gentry family. Malory illuminates political tensions and realities of the fifteenth century, then contrasts it to the idyllic portrayal of Arthurian kingship from his text passages in, Le Morte Darthur. Malory's early years were relatively calm. The Wars of the Roses was in full swing, and England was a hotbed of discontent and chaos that trickled down the social hierarchy. In 1450, Malory was notoriously accused of several criminal charges from theft, assault, and rape. An assault charge from an allegation stated Malory and others waylaid the Duke of Buckingham. Was this thuggery or politically motivated? This lifestyle put him in prison. I investigated connections between LeMorte and the socio-political atmosphere during the author's time and examined Le Morte as a commentary of the author referring to monarchical machinations during his lifetime. I also examined primary sources available, including court rolls, writs, arrest warrants, pardons, and a record of the inquisition. From the primary sources as well as from examining secondary sources, Malory was trying to create a new form of government. Overall his tale begins in chaos, then calmness, then chaos again. He showed that certain things must change within the government which is in chaos. The middle shows a possible solution for governing. However he also shows the pitfalls that can happen at the end of the book.

Mentor: Dr. Karen Jolly (adv) and Dr. Judith Kellogg (Mentor)

Damion Sailors  
Anthropology  
Completed Project  
Social Sciences  
Honors Program  
Oral and Poster Presentation  
12:00pm - Sarimanok Room

### Ho'olele Lupe: An Analysis of Traditional Hawaiian Kite Flying

Kite use in prehistoric and early historic Oceania was wide spread and practiced for a variety of reasons. Oral traditions and ethnographic accounts on a Pan-Pacific scale speak of ancient kites that exploited the wind in creative and practical ways. In Hawaii, these practices included chiefly competition, fishing, meteorology, navigation, spiritual meditation and as one heroic chant dedicated to the demi-god Maui states, for pulling canoes at great speed. Unfortunately, in the Pacific Island archaeological record, there is a dearth of material evidence related to kite-flying and consequently the analysis of this enigmatic technology required alternative research methods which primarily focused on “experimental” techniques. After drawing upon both archival data and observations made in the field, a range of functional replica Hawaiian kites were constructed and then tested in comparative flight scenarios that were performed to “... enhance analogies for archaeological interpretation”. (Mathieu 2002) The quantitative and qualitative data gathered in this project produced inferences addressing the following questions; “what were traditional Hawaiian kites like?”, “how were they flown?” and potentially “why were they used?” This experimental research is valuable in an archaeological context because it considers material issues of Polynesian prehistory that oral traditions and ethnography alone cannot resolve. It also has the social merit of reevaluating useful anthropological information regarding general Pacific history, Oceanic migration, Polynesian religion, and the cultural identity of Hawaiians. Key words: Oceania, Polynesia, Hawaiian kite-flying, ho’olele lupe, experimental archaeology

Mentor: Dr. Terry Hunt

Rachel Shaddox  
History  
Completed Project  
Arts & Humanities  
Honors Program  
Oral and Poster Presentation  
12:15pm - Tagore Room

### Facing the Apartheid Past: The TRC, Race and the New South African Society

Post-apartheid South Africa faced a serious problem deciding how to deal with past injustices and human rights violations. Although the transition from an oppressive, racially discriminatory government to a more egalitarian democracy was relatively peaceful, the question of whether to use restorative or retributive justice to heal the nation became a crucial issue. The Truth and Reconciliation Commission (TRC) was proposed as a means to avoid perpetuating violence and to encourage unity across South African society. Since reconciliation processes have been used in post-conflict societies around the world, often invoking the South African model, understanding how the commission addressed the violence of the past and repaired social divisions is important. This research focuses on the analysis of public opinion polls, TRC testimonies by white South Africans, and South African newspaper articles from 1997-2000. Although many scholars criticized its efficacy, this thesis argues that the TRC provided a moment in history for all South Africans to participate equally in society. For the first time, people were able to express openly their experiences under apartheid. In this way, the commission helped create a national consensus about the injustices and violence of the past. Whereas public discourse was blatantly racialized under apartheid, the TRC created an atmosphere in which a more peaceable and cautiously optimistic dialogue could prevail. Nonetheless, although the TRC provided a positive and productive means for South Africans to face the past collectively and move forward, the overwhelming injustices of the past continue to plague the nation.

Mentor: Ned Bertz

Boheng Shao (Jeremy)  
Political Science/ Economics  
Project Proposal  
Social Sciences  
Honors Program  
Oral and Poster Presentation  
10:00am - Pago Pago Room

Energetic Contradiction and Environmental Conflicts within Sino-US Relation in next 30  
Years

Tourism has unshakable significance in Hawaii's tourism-based economy due to its comprehensive contribution to the state government, local community and the people in general. The amount of visitors and their average expenditures are extremely crucial to a tourism-based economy since they contribute to sales, profits, jobs, tax revenues, and income.

In reference to tourism's variety of economic and social impacts, the government of the United States launched the Visa Waiver Program (VWP) in 1986 to attract more tourists and business people. Present studies shows that the VWP has made Hawaii one of the most beneficial states of tourism by attracting numerous Japanese travelers and proves the extraordinary importance of Japanese tourists in Hawaii by analyzing their contributions and influences.

Facing the decreasing number of Japanese tourists and their diminishing purchasing power, a self-administered questionnaire survey will be given to citizens, government officials, travel agencies, and retail stores in both Hawaii and five cities in China to collect perceptions of making China a member state of VWP. The results of this survey will indicate whether reducing visa requirements to Chinese tourists will increase the number of Chinese travelers to Hawaii and will improve Hawaii's tourism economy. These results will be analyzed both in terms of cost-benefit analysis and economic impact analysis. The study is expected to reveal sufficient evidence to support the importance and feasibilities of attracting Chinese visitors to Hawaii. If so a shift in marketing emphasis, service offerings, and policy-making may be necessary.

Janelle Takesono  
English and History  
Completed Project  
Arts & Humanities  
Honors Program  
Oral and Poster Presentation  
12:30pm - Tagore Room

### The Butterfly's Effect: The Internet's Effect on Portrayals of Japanese Women

In my project, I will be looking at how the portrayal of Japanese women on the internet reflects the history of their sexualization in the past. The internet will be considered a medium, which both objectifies women and emancipates them.

Mentor: Candace Fujikane

Jeremy Thacker  
Nursing  
Work in Progress  
Natural Sciences  
URC Summer, EARDA Summer Research Award  
Poster Presentation

### Can video game training enhance attentional capabilities

The amount of information that can be attended to and processed by humans is limited. Recent evidence suggests by practicing tasks that include information processing capabilities related to attention can enhance overall cognitive processing. For instance, expert video game players have exhibited enhanced capacity levels and improved temporal processing when compared with a non-expert population of control participants (see Green & Bavelier, 2003). The present research expands on these findings by requiring participants with no video game experience to undergo cognitive training sessions involving video game play of two different genres of games (action or non-action). Pre and post-training experimentation was designed to measure any potential enhancement in overall attentional capacity, or the ability to process irrelevant information. The genre of video game had no effect on performance, however, upon collapsing these conditions, attentional capacity was enhanced when comparing pre and post-tests. This was exhibited by improved target detection in an attentional blink task, an accepted measure of capacity. Specifically, after the training intervention, participants required less time to correctly identify a second target after identifying the first target. In a second experiment, irrelevant information that flanked targets was processed at higher perceptual loads in the post-test when compared with the pre-test, demonstrating an improved ability to process information that may not be relevant to the task. Combined, the present findings suggest that video game play can enhance information processing, specifically with regards to overall attentional capacity and the ability to process irrelevant information under high processing loads.

Mentor: Dr. Scott Sinnett

Jacob Vandor  
Anthropology  
Project Proposal  
Arts & Humanities  
Honors Program  
Oral and Poster Presentation  
12:15pm - Mandarin Room

### The USS Arizona Memorial: Challenge and Change in Maritime Heritage

On December 7, 1941 the Pacific Fleet of the United States Navy was brutally and tragically attacked while berthed at Pearl Harbor Hawaii. Later, President Franklin Delano Roosevelt would famously refer to the dawn surprise attack as “a date that will live in infamy” as he went on national television to console a grief stricken nation and galvanize them towards a victory against the axis powers in the Great War. Yet even with victory, the sinking of the USS Arizona and the thousands of gallant men who went down with her remained a raw and open wound on the American psyche. After the war, the site of the shipwreck became a memorial to the men forever entombed inside, and ultimately came to play the role of a synecdoche for the entire event. Today, The USS Arizona Memorial is globally iconic landmark visited by millions of tourists annually. Recently, the USS Arizona has also been recognized as a maritime heritage resource and under the stewardship of the National Parks Service and the US Navy the site has developed into a cultural touchstone and profoundly evocative and emotional monument. By studying and evaluating recent specific site archaeology as well as overarching goals and future intents, I will examine and explore the relationship between the different roles of the USS Arizona Memorial as monument, tomb and submerged cultural resource to reach a comprehensive understanding of the maritime heritage protection and projection here.

Samantha Wojciechowski  
Zoology  
Completed Project  
Natural Sciences  
Honors Program  
Oral and Poster Presentation  
10:00am - Kaniela Room

### Cold Case: A study of cooling temperatures in Hakalau

This study will analyze the weather trend for the years 2002 to 2010 in the Hakalau Forest National Wildlife Refuge on Mauna Kea on the island of Hawaii. The overall purpose of the study is to find if there was a decrease of temperatures, especially in the months of December to February. Colder temperatures during these months mean a greater potential for death to members of seven different native Hawaiian bird species. Data was collected daily for the eight-year study on site and analyzed using the daily minimum temperature regressed over the years. The results show an increase in the number of days below the average minimum temperature in later years, therefore the temperature has decreased. As such decreasing temperatures during the winter months is possibly one reason for the population decline of native Hawaiian birds over the past few years.

Mentor: Leonard Freed

Rain Wright  
English  
Project Proposal  
Arts & Humanities  
Honors Program  
Oral and Poster Presentation  
9:45am - Mandarin Room

### Struggle and Strength

My project, in its present form is my manuscript *Struggle and Strength*. It is in the rough draft phase of writing, at 95, 000 words. It is a work of fiction that explores the moral responsibility of a single mother to her children when it is in opposition to her personal desires. The nature of what good parenting is can at times be open to interpretation based on individual perception. However, when drug and alcohol abuse are present, the role of parent fades into lines of ambiguity, and often children are left attempting to rebuild what their parents destroy. *Struggle and Strength* is seen not only through the eyes of the mother, Amma, but also from the point of view of her seven year old daughter, Nina. When Amma is drunk, Nina is left to mother her younger sister, and restore daily what her mother extinguishes nightly—the mother-daughter bond.

My project will be rewriting, editing, fleshing out, and spit polishing my manuscript until it is reader worthy. It will include an analysis of Jane Austen, Anton Chekhov, Charles Dickens, and Ernest Hemingway's works. They clearly and with wisdom portrayed the realities of life during their time. Their literary works have been left as marker points in history, and often helped bring about social reform and consciousness to otherwise overlooked human conditions.

Above all, my project will be an attempt to do what writers do: combine words, ideas and thoughts to create something of significance—a good story.

Robert G. Young  
Mathematics and Psychology  
Work in Progress  
Natural Sciences  
Undergraduate Biology and Mathematics Program (UBM)  
Oral and Poster Presentation  
9:45am - Sarimanok Room

### The "Lillie Transition": Modeling the Onset of Saltatory Conduction in Myelinating Nerves

An animal's ability to communicate with itself and its environment is largely attributed to neurons, the cells that initiate and transmit electrical impulses (action potentials) down its axon and throughout the body. Some animals develop other structures such as myelin, a membranous sheath that envelops axon segments and accelerate impulse conduction. R.S. Lillie reported that rapid saltatory conduction arose in an iron wire model of nerve impulse propagation when he covered the wire in insulating segments of glass tubing. A similar transition from incremental to saltatory conduction must have occurred in the evolution of myelin and the development of myelinated axons from preexisting non-myelinated ones. This "Lillie transition" was examined with computer simulations in NEURON. A squid axon model constructed in NEURON was ensheathed by repeating insulating segments (at internodes) of variable dimensions. Constricting the internodes resulted in a slight slowdown in conduction velocity followed by a rapid speedup. The slowdown was unaffected and rise little affected by changes in the spacing between internodes. Slowdown was unaffected and rise strongly affected by changes in number of wraps per insulating segment. Slowdown was greatly affected by changes in internode length. The relative slowdown was much less for large diameter axons. The slowdown represents an "energy barrier" to the evolution and development of myelin. This suggests that a sheath-tightening mechanism in myelin evolution might best proceed by starting with a large diameter axon and tightening a short internode.

Mentor: Dr. Ann Castelfranco and Dr. Daniel K. Hartline

## NOTES

## NOTES

## ACKNOWLEDGEMENTS

### JUDGES AND MODERATORS

We would like to thank all the faculty members, administrators and researchers who volunteered to judge and moderate the sessions and to lend their experience and expertise to this student conference.

### FACULTY MENTORS

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Dr. Rebecca L. Cann	Dr. Dan Hartline	Dr. Joe W. Ramos
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Dr. Anne Castelfranco	Dr. Terry Hunt	Dr. Jane Schoonmaker
Dr. Jennifer Chandler	Dr. Karen Jolly	Dr. Noenoe Silva
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Dr. Qi Chen	Uzma Khan	Anne Marie Smoke
Dr. Wenfeng Chen	Dr. Ehito Kimura	Dr. Grieg Steward
Dr. Monique Chyba	Dr. Sankaran Krishna	Dr. Johann Urschitz
Dr. Robert Cowie	Dr. Ramdas Lamb	Dr. Angel Yanagihara
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Dr. Debra Drexler	Dr. Shu-Hwa Lin	

### HONORS COUNCIL AND TASK FORCE

We would like to acknowledge the time, effort and expertise that the Honors Council and Task Force members put into maintaining and expanding the Honors Program. Mahalo to the following for their hard work:

Dr. Ron Cambra	Vice Chancellor for Undergraduate Education
Dr. James Caron	Professor, English
Dr. Tep Dobry	Professor, Electrical Engineering
Dr. Heiner Dovermann	Professor, Mathematics
Dr. Susan Hippensteele	Professor, Women's Studies
Dr. Cynthia Hunter	Professor, Biology
Dr. Charles Kinoshita	Associate Dean and Professor, Molecular Biosciences & Bioengineering
Dr. Laura Lyons	Graduate Director & Professor, English
Dr. Thomas Pearson	Professor, Accounting
Dr. Jane Schoonmaker	Specialist & Undergraduate Chair, Oceanography

## **ACKNOWLEDGEMENTS**

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The Honors Program would like to thank the Honors students who helped to set up and take down the facilities and to monitor the rooms during sessions.

### **STAFF**

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## MĀNOA

### **HONORS PROGRAM**

The Honors Program provides opportunities for talented and motivated undergraduates to excel in their academic studies. Students complete a challenging enquiry-based curriculum that encourages independent research and creative expression. They enjoy intimate and personalized educational experiences within the setting of a large research university through small classes, dedicated advising, peer mentorship and faculty-guided projects. The Honors Program promotes critical thinking and oral, written and audio-visual communication skills; respect for diversity and commitment to social justice; and civic participation and capacity for leadership. It fosters among its students and faculty a sense of identity and a joy in scholarship, which it communicates to the university and the community.

<http://honors.hawaii.edu>

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