Whitman Undergraduate Conference

April 9, 2013

Whitman College

undergraduate conference

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Each year the Whitman Undergraduate Conference celebrates the scholarship and creativity of Whitman students through a day devoted entirely to their accomplishments.

The 15th Annual Whitman Undergraduate Conference brings together students from every academic area of the college to share their research and creative projects with the campus community.

The conference is noteworthy for its variety of presentations, which take the form of talks, poster presentations, musical performances and special exhibitions.

The projects in this program attest to the original work that Whitman students have produced in their courses, senior theses, summer internships and study abroad.

schedule

April 9, 2013

Breakfast: 8:15 a.m.
The only breakfast served on campus will be a continental breakfast in Olin Hall foyer, the Hall of Science Atrium and Reid Campus Center.

Session I: 9-10:15 a.m.

Coffee break: 10:15-10:45 a.m.
In Olin Hall foyer, the Hall of Science atrium and Reid Campus Center

Session II: 10:45 a.m.-noon

All-Campus Lunch: Noon-1 p.m.
Reid Campus Center

National Public Lands Radio: 1-2 p.m.
Cordiner Hall Balcony

Poster Session: 1-2 p.m.
Cordiner Hall Foyer

Session III: 2-3:15 p.m.

Afternoon intermission: 3:15-3:45 p.m.
Reid Campus Center

Session IV: 3:45-5 p.m.

musical performances

Morning Intermission
10:15-10:45 a.m.
Hall of Science atrium

String Quartet
Maya Abramson, violin; Spencer May, violin; Jacqueline Rees-Mikula, viola; Tess LeNoir, cello

String Quartet
Lila Stange, violin; Dana Thompson, violin; Aleida Fernandez, viola; Aaron Baumann, cello

String Trio
Erik Larson, violin; Isabella Lowery, violin; Rachel Ramey, violin

Lunch
Noon-1 p.m.
Reid Campus Center

Jazz Ensemble
Doug Scarborough, director

Saxophones
Max Bates, alto
Anya Tudisco, alto
Sebastian Jay, tenor
Brett Porter, tenor
Lucas Barry, baritone

Trumpets
Owen Lowry
Max Reikosky
Pablo Rivarola
Brett Leroux
Nick Pellatz

Piano
Ethan Maier
Jonas Myers

Trombones
Clayton Collins
Joey Schaffer
Erik Feldman
Tommy Gibson (bass)

Guitar
Aaron Stern

Bass
Nathan Radakovich
Caitlin Foster

Drums
Robby Seager
Skye Vander Laan

Afternoon Intermission
3:15-3:45 p.m.
Reid Campus Center

Jazz Combo
Max Bates, alto sax
Pablo Rivarola, trumpet
Ethan Maier, piano
Jonas Myers, piano
Aaron Stern, guitar
Nathan Radakovich, bass
Robby Seager, drums

	Olin Hall 130	Olin Hall 157	Gaiser 159	Science 100 Brattain Auditorium
Session 1	**Pop Media and the Message**	**Whitman Direct Action**	**Chemistry and Industry**	**Heavens and Earth**
9 a.m.	William Witwer	Hannah Palkowitz, Sean McNulty, Anna Murveit, Daniel Swain*	Tao Large	Kelley Hall
9:15 a.m.	Jessica Lawrence		Daniel Ellis	Nick Shariat
9:30 a.m.	Xialing Ann Chen		Andrew Larson	John Nortz
9:45 a.m.	Dana Thompson*		Spencer May, Alexis Guy*	Daniel Smith
10 a.m.				Rebecca Nevin*
Coaches	Yonah Biers-Ariel	Ben Duchin	Tory Davidson	Maggie Eismeier
Session 2	**Beyond the Bubble: Whitman Service Programs**	**Japan: Then and Now**	**Lava Flows**	**Animal Behavior**
10:45 a.m.	Allison Burns, Allison Ramp, Nathan Sany, Kenna Little, Lauren Kutler, Sophie Larsen, Elizabeth Miller, Natalie Pond*	Josephine Hoyne	Cassandra Smith	Jesse McKeen-Scott
11 a.m.		Elizabeth Lee	Adele Thornton	Thomas Glass
11:15 a.m.		Sara Portesan	Katherine Chapman	Natalie Jamerson
11:30 a.m.		Yukiko Ueda	Will Bender	Allyson Gibson
11:45 a.m.		Karin Tompkins*	Matthew Morriss*	Jordan Benjamin*
Coaches	Ben Duchin	Olivia Kipper	Zoe Randol	Maura Barstead

Noon-1 p.m. ☞ All-campus lunch in Reid Campus Center

1-2 p.m. ☞ Poster Session in Cordiner Hall

Session 3	**Along Racial Lines**	**Religious Rites**	**Changing Landscapes**	**Brain Matters**
2 p.m.	Erik Anderson	Erika Horwege	Annette Patton	William Stark
2:15 p.m.	Claire Baron	Sabrina Wise	Emma Oschrin	Alejandro Fuentes Mena, Kayla Sua
2:30 p.m.	Rebecca Helgeson, Jazzmyne Ross	Caroline Carr	Abbye Neel	Navkiran Aujla
2:45 p.m.	Kenna Little, Lian Caspi, Kelly West*	Benjamin Menzies*	Isabella Lowery	Haley McLeod, Calvin Atkins*
3 p.m.			Hannah Palkowitz*	
Coaches	Mari Cannon	Olivia Kipper	Tory Davidson	Zoe Randol
Session 4	**Gender and Sexuality**	**Philosophies and Theologies**	**Politics of Place**	**Poverty and Childhood Development**
3:45 p.m.	Elizabeth Daviess	Sandra Matsevilo	Andrew Strong	Catherine Sturtevant
4 p.m.	Jenna Fritz	Shannon Kelly	Helen Angell	Sarah Stanger, Helen Jenne
4:15 p.m.	Carly Johnson	Merrett Krahn	Zoey Rogers	Rachel Shober, Al-Rahim Merali, Ariel Carter-Rodriguez
4:30 p.m.	Morgan Caverhill, Vy Cao-Nguyen	Wyatt Thomas	Heather Domonoske*	Nick Tacke, Lillian Bailey*
4:45 p.m.	Spencer Wharton*	Michael Putnam*		
Coaches	Satinder Haer	Elana Simon	Alexandra Norman	Maura Barstead

panel schedule

**Denotes moderator*

Science 151	Maxey 104	Kimball Theatre	Reid G02
Genes and Germs		**American Politics: Civil War to District Lines**	**Education and Social Change**
Alexandre Germanos		Kate Kunkel-Patterson	Zoe Ingerson
Kendra Klag		Sonya Fabricant	Marie von Hafften
Lauren Davis		Erik Larson	Henry Gales
Paul Hamilton-Pennell*		Evan Kleiner	Haverty Brown*
		Amalya Dubrovsky*	
Tom Vogt		Elana Simon	Elizabeth Lee
Marine Life	**"Quality" TV: "Peaks" and Hollows**	**Jazz Influences**	**Television and Its Discontents**
Gemma Wallace	Nathan Lessler	Annelise Osterberg	Jessica Good
Ethan Robertson	Meleeya Schwartz	Paul Eschbach	Sally Boggan
Nilce Alvarez	Stephen Toyofuku	William Seymour	Sara Graham
Nicholas Chow*	Griffith Jones*	Rachel Quednau*	Jade Blake-Whitney*
Tom Vogt	Madeleine Hale	Florence LeBas	Richael Best

1-2 p.m. National Public Lands Radio

Semester in the West students bring their field experiences to life in short audio podcasts and one film documentary short in the Cordiner Hall Balcony.

Mental Health	**Immigrant/Migrant Issues**	**Culture Clubs and Critiques**	**Global Politics and Economics**
Jedidiah Jacobson, Leland Matthaeus	Madelyn Peterson	Nathan Wong	Shelly Le
My Xuan Vo, Johanna Otica	Alex Brott	Adam Brayton	Leah Siegel
Laine Atcheson	Spencer May	Paige Joki	Sebastian Jay
Robyn Metcalfe*	Rachel Alexander*	Hari Raghavan*	Suzanne Jaszczult*
Satinder Haer	Shanglun Wang	Yonah Biers-Ariel	Andy Larson
	Literary Drifts	**Great Performances**	**Creative Process**
	Eli Zavatsky	Diana Wu	Carrie Cecil
	Kathy Nguyen	Ethan Maier	Olivia Kipper
	Gabriella Friedman	Aaron Stern	Clare Spatola-Knoll
	Katherine Haaheim*	Erik Feldman*	Elizabeth Hambleton*
	Richael Best	Mari Cannon	Madeleine Hale

posters *(Lead presenters)*

Geneva Scharff | Using RNA Interference to Create Gene Knockout Plants

Plant intracellular ras-group-related leucine-rich repeat proteins (PIRLs) are a novel class of plant proteins involved in cell signaling and gene regulation. Gene analysis has shown that two members of the gene family, *PIRL1* and *PIRL9* are redundant and essential for pollen development and viability. I wanted to see if these genes affected other aspects of plant development, and tested if RNA interference (RNAi) could be used to silence these genes. RNAi is a process that uses the genetic material RNA to inhibit gene expression. Plants with an inducible RNAi system were grown and compared to wild type plants to determine if the RNAi did silence the genes. This project was funded by a grant from the Howard Hughes Medical Institute. Faculty Sponsor: Arielle Cooley

Morgan Dienst | Systematic Model Building of the Active Site of Carbon Monoxide Dehydrogenase

Carbon monoxide dehydrogenase (CODH) is an enzyme found in the soil bacterium *Oligotropha carbidoxovorans* that removes significant amounts of toxic carbon monoxide (CO) from the environment. The conversion of toxic CO to less toxic carbon dioxide occurs at an active site, molybdenum-copper (Mo-Cu), in the enzyme. The overall structure of the enzyme is well understood. However, the CO conversion process remains unclear, and warrants further investigation. Currently, we are utilizing computational modeling to better understand the environment around the Mo-Cu center, and its influence on the overall structure of the active site. This information will allow us to further validate the conversion process, which is essential for generating synthetic models of CODH. These synthetic models show promise in their potential applications towards cleaner, more environmentally friendly energy technologies. This project was funded by a Perry Summer Research award from Whitman College. Faculty Sponsor: Dalia Rokhsana

Ross Kendrick | Enhancing Epoxy Polymer Mechanical Properties Through Reinforcement With Graphene and Graphene-Based Compounds

The goal of this literature review was to analyze the studies done to improve the mechanical properties of epoxy resins, specifically using the Young's modulus and tensile strength. The Young's modulus describes the stiffness of the elastic polymer material, while the tensile strength is a measure of the maximum stress the material can withstand before breaking. The epoxy resin focused on in the review was diglycidyl ether of bisphenol A (DGEBA) with 3,3 diamino-diphenyl sulfone (33DDS) as an activator. This epoxy was reinforced with graphene and graphene-oxide based compounds to analyze their impact on the resin's Young's modulus and tensile strength. It was found that both graphene and graphene-oxide reinforcement significantly improved both Young's modulus and tensile strength, raising the possibility of using graphene reinforced epoxy resins in structural materials requiring flexibility and/or lightweight characteristics. Faculty Sponsor: Allison Calhoun

McKenzie Momany | Dengue in Puerto López, Ecuador: the Incidence and Level of Knowledge of the Townspeople about a Deadly Mosquito-Borne Illness

Dengue is a mosquito-borne illness that affects around 100 million people every year in the tropics and subtropics. I completed a study in the coastal town of Puerto López, Ecuador to determine the incidence and level of knowledge the townspeople have about dengue. I interviewed 50 townspeople over the period of a month, questioning them about their history of dengue and knowledge of the disease. Results indicated a relatively low level of dengue, with no large changes in the incidence in the last five years. The knowledge of the people was found to be satisfactory only in terms of identifying the organism of transmission and how it reproduces, and lacking in regards to which mosquito transmits dengue, how it becomes infected, its appearance, and when it bites. Measures should be taken to increase the education of the people in order to improve preventative measures and lower the incidence of dengue. Faculty Sponsor: Daniel Vernon

Danielle Wilson | New Photometry and Ages for Ko 1 and Ko 2

We present new photometry of the globular clusters Ko 1 and Ko 2, obtained with the 2.4m Hilter telescope at the MDM Observatory on Kitt Peak. The globular clusters were discovered by S. Koposov, detected with the SDSS Data Release 5 in 2006, and subsequently published in the Astrophysical Journal (Koposov et al. 2007). Stellar evolution models from Dartmouth Stellar Evolution Program (DSEP) were compared with our new photometry to determine the ages and distances of the clusters. The data extends from the tip of the red giant branch to the main sequence

turnoff. Using the isochrones with [Fe/H]=–2.4, Ko 1 was determined to have an age of 14.0 ± .5 Gyr and Ko 2 was determined to be 11.5 ± 1.0 Gyr using a [Fe/H]=–1.10 isochrone. We found a distance modulus of (m–M)v = 17.9 (38 kpc) and 17.05 (26 kpc) for Ko 1 and Ko 2 respectively. Faculty Sponsor: Nathaniel Paust

John Whiting | Glacial Morphology and Hydrology on Linnébreen, Svalbard

The high Arctic archipelago of Svalbard has been a key location for climate change studies for the past century due to the increasing severity of warming in polar regions. Linnébreen, a small maritime glacier in Spitsbergen, is shrinking as the climate warms. Field measurements of glacial extent and mass provide an idea of the rate of retreat over the past decade. Additionally, study of meltwater hydrology and sediment transport contributes to understanding historic glacial behavior as recorded in varves deposited in the downstream lake. While it is important to understand present climate change, it is also critical to research historic climate change in order to predict and plan for what may occur in the Arctic in coming years. The National Science Foundation funded this Research Experience for Undergraduates project. Faculty Sponsor: Robert Carson

Madeleine Coleman | IL-1 Production in Mouse Astrocytes

Astrocytes are non-neuronal brain cells that oversee many aspects of brain metabolism, such as the immune response within the central nervous system (CNS). Within the CNS, the immune response is a series of molecular cascades that triggers neural protection in the form of inflammation or degeneration, which alert the brain to the presence of a pathogen. Interleukin-1 (IL-1) is a cytokine whose release leads to neuroinflammation. Host-derived or foreign molecules stimulate this release. In the peripheral nervous system, macrophages predominately produce IL-1, but the source of IL-1 in the CNS has not been elucidated. The study aimed to determine the types of immunologic triggers that activate IL-1 synthesis and release in the CNS, and to examine whether CNS astrocytes can produce IL-1. Our results indicate that mouse astrocytes can produce IL-1 at levels comparable to macrophages, and thus may be important players in the immune response by the brain. Faculty Sponsor: Ginger Withers

Rachel Reiter | The Function of PIRL2, PIRL3, and PIRL9 in Pollen Development in *Arabidopsis thaliana*

Arabidopsis thaliana is widely used in plant research. It has many genes, but nine in particular, encoding Plant Intracellular Leucine-rich Repeat Proteins (PIRLs), are of interest. PIRLs are of particular interest because of their similarity to proteins that play a role in cell signaling and gene regulation pathways in animals and fungi. PIRL1 and PIRL9 play a critical role in pollen development, while PIRL2 and PIRL3 are hypothesized to have a lesser role. I used confocal microscopy to investigate how different combinations of knockout mutations in PIRL2, PIRL3, and PIRL9 affect pollen morphology, in order to determine their respective roles in pollen development. I found that PIRL2PIRL3 mutant pollen mostly resembled wild type, while triple mutant pollen differed greatly, which suggests that PIRL2 and

PIRL3 play a minor role in pollen development, but still interact with PIRL9. An Abshire Award from Whitman College funded this project. Faculty Sponsor: Daniel Vernon

Nicholas Pellatz | Synthesis and Characterization of Tb-Doped Rare Earth Garnet Nanopowders

In fluorescent lights, the coating material on the inside of the bulb absorbs the mercury vapor UV light emission and emits light in the visible spectrum to make it appear white rather than blue. Our work focuses on optimizing the fabrication of nanocrystalline materials which similarly down-convert light and can be used in similar applications. The use of rare earth ions as the optically active centers in these crystals is motivated by their well-defined, spectrally narrow, relatively efficient, and predictable light emission properties. In our research, we were able to modify a relatively novel combustion synthesis procedure to fabricate three varieties of rare earth garnet doped with varying concentrations of the rare earth ion Terbium. All three garnets exhibited strong crystallinity and we observed characteristic concentration effects on the Terbium emission in each. This project was funded by the Whitman College Bleakney Endowment. Faculty Sponsor: Kurt Hoffman

Brian Raftrey | Cellular Mechanism of Coronary Artery Development

The circulatory system is the first fully functional organ system in the embryo and allows subsequent developmental processes to proceed by providing blood to the rest of the body. Despite the significance of the beating heart, questions remain about the cellular mechanisms by which coronary arteries arise to connect blood flow to the heart muscle itself. Simple outgrowth of endothelial cells, which construct blood vessels in the process of angiogenesis, does not explain development of coronary arteries because angiogenesis is restricted in the area directly surrounding the aorta. Alternatively, my research investigated the hypothesis that associations between myocardial cells (heart muscle cells) and endothelial cells would permit growth in the restricted region. Chemical labeling allowed for visualization of specific cells in developing mice hearts as different colors, which revealed a myocardial bridge into the inhibited angiogenic zone. As a result, endothelium was able to grow toward its target tissue. Faculty Sponsor: Christopher Wallace

Michele Evertz | The Volcanic Sediments of Lookingglass Creek: a Regional Correlation

The Columbia River Basalt Group is an enormous volcanic province spanning parts of Washington, Oregon, and Idaho, consisting primarily of stacks of cooled basaltic lava flows. Between some of these basalt flows are distinct, pale-colored interbeds of volcaniclastic sediment representing poorly-understood episodes of silicic volcanism. These sediments can help us understand the eruptive style and regional extent of these silicic eruptions, and also provide snapshots of the paleoenvironment and paleoclimate of the region. In this study we analyzed the stratigraphy and geochemistry of a thick silicic interbed at Lookingglass Creek in northeastern Oregon to determine the potential origins of the volcanic sediments and correlate the section with other described units. The resulting regional correlation will help us to understand the origin and nature of silicic volcanism within the Columbia River Basalts. This project was funded by the Perry Summer Research Award from Whitman College and the Keck Geology Consortium. Faculty Sponsor: Nicholas Bader

Jordan Benjamin | A New Clinical Guide to Assessment, Diagnosis, and Treatment of Snakebite in Sub-Saharan Africa

In sub-Saharan Africa, treatment of snakebite is complicated by deeply entrenched local beliefs and a lack of fundamental knowledge on snake venoms and envenomations that results in the subject being viewed more as an issue of mysticism than one of medicine. It is not enough to simply produce more antivenoms, or better and safer serums, if the medical workers who are tasked with the treatment of these bites do not already possess the fundamental knowledge of envenomation medicine that underlies both the clinical progression of a snakebite and the ability to determine and implement an appropriate treatment plan to address it. In order to address this issue, I have created a clinical system that brings together pertinent herpetological and biomedical knowledge and distills it down to the critical information clinicians need to drive life-saving decisions at the bedside. Faculty Sponsor: Kate Jackson

Phi Phan | Organochlorine Pollutants in Remote Northwest Alpine Lakes

Parts-per-quadrillion (ppq) concentrations of organochlorine pollutants in Pacific Northwest alpine lakes were measured using a novel head space solid-phase microextraction (HSSPME) and gas chromatograph with electron capture detector (GC-ECD.) Samples were collected July 2012 from eleven lakes above 2200 meters in the Eagle Cap Wilder-

ness, Oregon and the Big Horn Crags, Idaho. Detection limits of 1 ppq were achieved in 950 mL samples for 17 compounds. Measurements demonstrate organochlorine pollutant levels from 1 to 500 ppq in the lakes of the Pacific Northwest. Faculty Sponsor: Frank Dunnivant

Kathryn Collins | Reproductive and Propagation Strategies in Noxious Weed Bohemian Knotweed

Fallopia x bohemica (Bohemian Knotweed) is a Class B Noxious Weed that has begun to establish itself in Walla Walla County. It has been identified in private and public properties inside the Walla Walla and College Place urban growth boundary, mainly along creeks where it displaces native species. Bohemian Knotweed is a hybrid of two different introduced knotweed species and reports on its ability to produce viable seeds are conflicting. To obtain more information, seeds from different locations were tested for germination potential using different cold storage treatments and germination media. In addition, the ability of this weed undergo vegetative propagation, through cut-up plant pieces on home refuse piles, was tested by subjecting rhizome pieces of different dimensions to physical conditions mimicking a home compost heap. Understanding this plant's main means of propagation may be helpful in developing management strategies. Faculty Sponsor: Heidi Dobson

Kendell Gilmore | Too Much of a Good Thing: Overexpression of PIRL9 in *Arabidopsis thaliana*

The PIRL genes are a family of nine genes discovered during the sequencing of the *Arabidopsis thaliana* genome, the first fully-sequenced plant genome. PIRLs are hypothesized to be important to plant development. As part of an ongoing systematic study to gain insight into PIRL functions, I examined *Arabidopsis* plants engineered to overexpress the PIRL9 gene. Plants containing an extra copy of PIRL9 designed to drive overexpression of the gene were identified and observed as they grew. Using qPCR, the amount of PIRL9 mRNA present in the different plants was quantified and linked to previous plant measurements. Data showed a correlation between severely stunted plant growth and overexpression of the PIRL9 gene. Significance of these results for PIRL9 function will be discussed, but further genetic and phenotypic analysis is needed to confirm and assess the effects of PIRL9 overexpression. This research was made possible by a Perry Summer Research Award. Faculty Sponsor: Nancy Forsthoefel

Michael Lollini | Polycyclic Aromatic Hydrocarbons

Polycyclic aromatic hydrocarbons (PAH) encompass a wide range of compounds that are emitted from a number of sources both naturally as well as industrially. They are environmental contaminants and carcinogens found mainly in the air, soils, and waters throughout the world. PAH's are introduced into waters from fallout of particulate matter in the air, runoff of polluted soils, and from direct pollution of the waters themselves. This research focuses on case studies involving the contamination of waters throughout the world, and looks at what major factors, including urban populations and volcanic eruptions, lead to the increased levels of PAH's in the environment. Faculty Sponsor: Steven Hughes

Jung Song | Direct Observation of Chlorinated Organic Pollutants on River and Lake Sediment

Chlorinated organic pollutants, such as DDT and PCBs, can occur as two types, those sorbed to sediment particles and those in a pure chemical phase known as Dense Non-Aqueous Phase Liquids (DNAPL). A previous investigation in our lab developed a method for distinguishing between these two types of pollutants but the three-month long time frame of the experiment makes it unlikely that it will be widely adopted for use. This investigation will present data from our efforts to directly observe the DNAPL phase with scanning electron microscopy (SEM) using energy dispersive spectrometry (EDS) detection of chlorine. Faculty Sponsor: Frank Dunnivant

Thomas Haffner | Evaluation of ISBER Best Practices for Biorepositories

The growing need for tissue samples in biological research has led to an explosion in the growth of biorepositories which collect, store, and annotate the biospecimen necessary for research. However, the growth of these repositories has outpaced the informatics developments essential to their effective and efficient function. Of primary concern is the use of outdated database management systems which fail to support the increasing volume of specimen and required level of annotation. Despite the amount of biorepositories facing this challenge, documentation on the subject is relatively sparse. In an effort to examine and supplement the literature on this issue I worked in close contact with one biorepository currently facing this problem, and interviewed 19 others. Here I discuss specific gaps in the ISBER

Best Practices checklist and detail six specifications that I found to be most useful to current and future repositories' data management. Faculty Sponsor: Thomas Knight

Elizabeth Peterson | Reducing Tibial Shock in Female Distance Runners

Tibial stress fractures, a common injury among female runners, are associated with high impact as a runner's foot hits the ground. Stress fracture prevention is a key area of research, and there are several approaches to reducing the impact on the lower extremity. This study examines the effect of the footstrike pattern on tibial shock. Proponents of barefoot running have proposed that a runner can reduce tibial shock, and therefore their risk of injury, by initially striking the ground with the forefoot rather than the heel. Using a treadmill force plate and a leg-mounted accelerometer, we compared the tibial accelerations and ground reaction forces between natural forefoot runners and natural rearfoot runners. The results do not show a significant difference in tibial acceleration between forefoot and rearfoot runners, suggesting that the benefits of forefoot running may have been overstated. Faculty Sponsor: Thomas Knight

Lori Mendelsohn | Investigation of the Link Between p27 Localization and the Progression of HER2+ Breast Cancers

Under normal conditions, cell growth is tightly regulated through the interaction of many proteins involved in interconnected cell signaling pathways. p27 is one such protein. It helps to regulate cell proliferation through its cell cycle inhibitory function. More recently, p27 has also been found to be a key player in some cancers by promoting uncontrolled progression of the cell cycle--a phenomenon which may be linked to its subcellular localization. In this study I investigate whether the localization of p27 to the cytoplasm in HER2+ breast cancer cells is associated with its cancer-promoting functions using immunohistochemistry, cell proliferation assays, and drug dose response curves. I find evidence that p27 is more localized to the cytoplasm in HER2+ cells than HER2- cells, and that it may be linked to possible malignant functions. This project was conducted at the Fred Hutchinson Cancer Research Center and funded by Whitman College and HHMI. Faculty Sponsor: Leena Knight

Stanislav Walmer | Novel Classes of the 26S proteasome

The body's cells are in a dynamic state of breaking down abnormal proteins and synthesizing new ones. In eukaryotic cells, most proteins become degraded by proteasomes, which are protein complexes that have sites where a chemical reaction takes place in order to break peptide bonds. Proteasomes must be highly regulated to prevent the unwanted breakdown of vital cellular components. The gradual decline of proteasomal activity, especially as organisms age, means more abnormal proteins accumulate and in turn, cause a further hindrance to the efficacy of proteasomes. However, it was found that the complete inhibition of proteasomes induces programmed cell death. Even more interestingly, cancerous cells favorably undergo this more readily than normal cells, which has sparked an expedition in pharmaceutical research to find more inhibitory pathways. My research reviews recent discoveries of novel proteasomes inhibitors, which could have auspicious relevance for cancer patients and people with neurodegenerative diseases. Faculty Sponsor: Marion Götz

Jonathan Ruffin | Measurement and Modeling of Thermal Contraction of Protein Cryoprotectants

Cryoprotection of protein crystals has long been a focus of research in the field of crystallography. Without the correct cryoprotective fluid surrounding it, a protein crystal can be subject to cracking during cryopreservation. Crystallographers have found certain liquids to be quite effective at minimizing this damage. My research aims to provide information about the thermal contraction of different cryoprotective agents that will help determine the optimal cryoprotectant concentration for different proteins. Using data from my own experiments and those performed by my professor and his colleagues, I attempted to model the thermal contraction of the cryoprotectants at different concentrations using the parameters of the solutions and a modeling program called ProFit. This model would be useful in predicting the ideal cryoprotectant and concentration to best preserve a given protein. Faculty Sponsor: Douglas Juers

Gus Friedman | Developing a Chemical Remediation for Carbon Monoxide Pollution

Carbon monoxide dehydrogenase (CODH) is an enzyme found in soil bacteria that converts toxic carbon monoxide into carbon dioxide. Carbon monoxide is an urban air pollutant and an indirect greenhouse gas. Its mitigation is important and could be achieved with a synthetic model of this enzyme's reaction center. There are currently few syn-

thetic models of the reaction center, and of those none are functional. Our goal is to build on those models to create a functional model that is more similar to the structure found in the enzyme. To achieve this goal, we explored different models computationally in search of ligands that provide similar properties to the enzyme. Currently, we are using the most suitable ligands to synthesize new model complexes. This project was funded by an HHMI Summer Research Grant from Whitman College. Faculty Sponsor: Dalia Rokhsana

Stacey Rosenzweig | Creating a Fluorescent Probe for ROS1 Rearrangements in Lung Cancer

Cancer, the uncontrolled growth of cells, is the leading cause of death in the world. It is a disease that has many causes, rapid mutations and pathways that are still unknown. Among cancers, lung cancer has appeared to be most deadly, killing about 1.4 million people per year. One recently discovered pathway alteration that can cause lung cancer involves the ROS1 gene. In order for the gene rearrangement to be detected, one can design a probe that binds to the ROS1 gene. This study attempted to use different methods of creating the brightest fluorescent probe possible for the ROS1 gene for detection under a microscope. The experiments were successful at creating a fluorescent probe for the ROS1 gene in the laboratory. This will make it easier and cheaper for labs to obtain such a probe, and is a step towards faster cancer detection. Faculty Sponsor: Arielle Cooley

Julianne Masser, Alyssa Roberg and Grace Birkenbeval | Examining Answer-Until-Correct Feedback With Partial-Credit Scoring in a College Classroom Setting

Psychologists have found that feedback on multiple-choice testing improves learning. One feedback technique that has received attention in the literature is the Answer Until Correct (AUC) technique, which allows individuals to make additional choices after an initial incorrect choice until they choose the correct answer. AUC also provides the opportunity to award partial credit for choosing the correct answer subsequent to an initial incorrect choice. Laboratory research has shown that pairing partial credit with the AUC technique leads to improved performance on later assessments. Our study extends this work to an actual classroom setting of 19 Whitman College students. Our findings will be interpreted in terms of the extent to which they replicate laboratory research showing superior performance on material initially assessed using the AUC technique and partial-credit scoring. Our research contributes to the existing literature on learning and could increase the effectiveness of both teacher feedback and student performance. Faculty Sponsor: Sherry Serdikoff

Kelsie Helberg | Tracking Mouse Frontal Cortex Projections to the Basal Ganglia and other Oculomotor Regions Using Anterograde Tract Tracing

The frontal eye field (FEF), located in the frontal cortex, is a crucial area for the coordination and integration of head and eye movements in primates. Research on monkeys has explored FEF projections, and in doing so, established numerous regions as vital to head and eye movements. FEF projections have not been thoroughly explored in mice. If the mouse FEF region and network can be confirmed as homologous to that of the primate, the mouse can become an oculomotor research model organism. Mouse FEF projections to three regions associated with head and eye movement, the paramedian pontine reticular formation (PPRF: both oral and caudal), gigantocellular reticular formation (GI) and superior colliculus (SC) have been observed in past research, which I helped to confirm. In particular, my research focuses on mouse FEF projections to the basal ganglia, as this is yet another crucial region connected to the FEF in primates. Faculty Sponsor: Thomas Knight

Erin Carnahan | Diminished Self-Importance: How Feelings of Inclusion and Exclusion Damage or Bolster Self-Concept

Diminished Self-Importance, a feeling of being small and insignificant in the grand scheme of things, is a new strategy which helps protect people's positive views of themselves in the face of adversity. People who experience DSI may perceive that their problems are smaller and less overwhelming, potentially leading to positive psychological health. Although DSI elicits positive psychological outcomes in some cases, evidence also suggests that it can have negative effects (Mizoguchi, 2012). In light of this contradictory evidence, we propose that there is a positive and a negative form of DSI. In our current research, we attempt to examine why feelings of DSI sometimes leave levels of self-worth intact and reduce stress, while at other times DSI reduces self-worth and elicits anxiety. We hypothesize that whether DSI takes a positive or negative form critically depends on whether one feels included or excluded from the surrounding environment. Co-presenter: Olivia Nielson. Faculty Sponsor: Nobuko Mizoguchi

session 1
9-10:15 a.m.

Pop Media and the Message
Olin Hall 130
Dana Thompson, moderator
Yonah Biers-Ariel, coach

William Witwer | Not For Children: The Vitality, Racism and Rebellion in Early Cartoons, 9 a.m.

Cartoons might be a staple of childhood today, but originally they were frenetically adult fantasies of violence, race and sex. Disney changed all that with its landmark "Snow White and and the Seven Dwarves," the first widely successful animated feature. My presentation examines "Snow White" in contrast to the manic energy of two other notable short versions of the same fairy tale: "Betty Boop's Snow White" and the infamous all-black parody "Coal Black and De Sebben Dwarves." I argue that, despite the more outwardly illicit material of the latter two creations, Disney's version of "Snow White" is much more problematic. Both "Betty Boop's Snow White" and "Coal Black," while not exactly progressive, expose the ideological fault lines that Disney so earnestly seeks to cover up. Faculty Sponsor: Anne Petersen

Jessica Lawrence | You Better Watch Out, You Better Not Cry: Ideology in Christmas Cinema, 9:15 a.m.

"Christmas" has been redefined and essentially commodified through our materialistic traditions and consumption of Christmas-themed media. "Christmas genre" cinema, in particular, provides brief repose from the harsher realities of the real world and attempts to answer our social issues with ideological responses. Though Christmas ideologies console our social anxieties, these ideologies are harmful in the long run. They secure the interests of the dominant social group, which generally is white, heterosexual and male. When audiences return to "classic" Christmas films on an annual basis, they expose themselves unknowingly to the same recurring ideologies. My presentation will highlight three different Christmas genre films: "It's A Wonderful Life" (Capra, 1946), "A Christmas Story" (Clark, 1983), and "The Family Stone" (Bezucha, 2005). My analysis of these films will focus on ideological similarities and the problematic effects of ritualization. Faculty Sponsor: Anne Petersen

Xialing Ann Chen | Female Sexuality and Obedience: Theorizing Male Gaze, Male Hegemony and Racial Ideology in "Lust, Caution," 9:30 a.m.

Ang Lee's "Lust, Caution" (2007) is a suspenseful espionage film that follows the story of Wong Chia Chi (Tang Wei), who uses her sexuality to lure Mr. Yee (Tony Leung) to a death trap for a national cause. Wong develops a strong physical and emotional attachment to Mr. Yee, resulting in her betrayal of her nation. Yee's prominent, lasting control over Wong is accomplished through a form of negotiated, albeit subconscious, hegemony: Yee shows he truly loves and trusts Wong, and in exchange, Wong becomes his love slave. In my presentation, I argue that this type of male and female relationship masks male patriarchy and naturalizes it: Women willingly obey men. Careful analysis of the film's reception not only reveals the presence of male hegemony but the existence of naturalized racial ideology and normalized exploitation of the female body in Chinese society. Faculty Sponsor: Anne Petersen

Dana Thompson | Replicators Everywhere: Memes, Ideologies and the Reproductive Atmosphere of the Unrestricted Internet, 9:45 a.m.

What could "Confession Bear" or "Foul Bachelor Frog" tell us about ourselves? In my presentation, I argue that Internet memes are an extension of the human tendency to replicate and therefore propagate the most successful cultural

ideologies. Like genes, memes are able to reproduce themselves based on their adaptability and appeal. Since the Internet allows for instantaneous, worldwide sharing, it presents a new frontier of sorts: the perfect medium by which memes today can replicate. Image macro-memes like "Successful Black Man" are literal in their self-replication; the same picture and basic joke is made over and over. However, the fact that memes use the same images and words does not encapsulate the full meaning of mimetics. Rather, their importance lies in the perpetuation of ideologies and the identification of the most intrinsic (that is, naturalized) ideologies of a group at a given point in time. Faculty Sponsor: Anne Petersen

Whitman Direct Action

Olin Hall 157

Daniel Swain, moderator

Ben Duchin, coach

Hannah Palkowitz, Sean McNulty, Anna Murveit and Daniel Swain | Whitman Direct Action, 9 a.m.

Last summer, five Whitman students spent nine weeks living and working with a small community of subsistence corn farmers on the coastal lowlands of Guatemala. The goal was to perform an interdisciplinary study of the links between drinking water and health, which was accomplished through the use of water testing, ethnographic interviews, and participation in daily life. This project, funded partly through ASWC, is designed as a stepping stone in an ongoing student-led development project. We will share our research findings, as well as reflect critically on development work and the complex moral and logistical challenges involved. We will examine the idea of "solutions" to problems of international development through the lens of our own work's specific context. Faculty Sponsor: Robert Carson

Chemistry and Industry

Gaiser 159

Alexis Guy, moderator

Tory Davidson, coach

Tao Large | Computational Modeling of the Active Site of Carbon Monoxide Dehydrogenase, 9 a.m.

Carbon monoxide dehydrogenase (CODH) is a bacterial enzyme instrumental within the global carbon cycle, where it facilitates the conversion of toxic carbon monoxide to less-toxic carbon dioxide. This conversion occurs at an active site containing a molybdenum and copper center. The structure of the active site and its unique conversion process are currently under intense investigation; however, further study is necessary to fully understand the structural features that are required for its function. We are applying a cutting-edge systematic model building approach to investigate the importance of these features around the active site. These computational models will be useful for understanding the structure-function relationship of the enzyme, as well as in designing new synthetic mimics of the enzyme's active site that have potential applications in future environmental and energy technologies. This project was funded by a Whitman Internship Grant and a Perry Summer Research Award from Whitman College. Faculty Sponsor: Dalia Rokhsana

Daniel Ellis | Computational Design of a Synthetic Model of Carbon Monoxide Dehydrogenase, 9:15 a.m.

Carbon monoxide dehydrogenase (CODH) is an enzyme found in soil bacteria that catalyzes the oxidation of carbon monoxide to carbon dioxide in the presence of water. CODH contains two metal ions, molybdenum and copper, at its active site that are essential for its function. The unique chemical properties of this enzyme inspired us to design

smaller synthetic catalysts for the oxidation of CO (carbon monoxide), which would have many environmental and industrial applications. To work towards developing a synthetic model of the enzyme, computational modeling was utilized to design small molecules with similar properties. Several active site models of CODH were generated from our computational studies, which provide insights into the requirement of certain features around the active site of CODH, and future challenges for synthesizing a functional catalyst. Faculty Sponsor: Dalia Rokhsana

Andrew Larson | The Future of Shale: Bridge Fuel or Dead End?, 9:30 a.m.

Between 2006 and 2008, the United States' reserves of natural gas expanded by 35 percent despite continued use of our gas resources. The reason: the discovery of shale gas and the invention of technologies to retrieve it. This expansion of shale gas has been heralded as the solution to our energy problems because of its low carbon emissions compared to coal, its low cost, and its abundance. Shale gas has been widely praised as a bridge fuel, one that could allow us an easy transition to a renewable energy-based, low-carbon economy. Critics argue that new sources of cheap fossil fuels doom renewable energy innovation and potentially lock in carbon emissions for the long term. My presentation examines the potential that shale gas exhibits as a replacement for coal in the U.S. energy portfolio with an eye toward future carbon reduction. Faculty Sponsor: Jan Crouter

Spencer May and Alexis Guy | Micelle Solution Composition Under Varying Salt Levels, 9:45 a.m.

Surfactant molecules, found in soap, contain both hydrophobic and hydrophilic portions. They self-assemble in water to form various shapes where the hydrophobic parts associate to avoid contact with the water. These aggregates are called micelles. Fats and oils will preferentially dissolve in the micelles' center. Adding salts can alter the properties of solutions containing micelles. To examine the structure of the micelle, we are investigating how the presence of a salt affects the overall micellar solution through surface tension measurements. Simultaneously, we use Xe-129 nuclear magnetic resonance to probe the structure of the micelle itself. We report results from solutions of sodium decyl sulfate, sodium octyl sulfate, sodium heptyl sulfate, and sodium hexyl sulfate, changing the level of sodium chloride in each. Further, we consider these findings' applicability to medicine and industry through micelle engineering. Faculty Sponsor: Allison Calhoun

Heavens and Earth

Science 100, Brattain Auditorium

Rebecca Nevin, moderator

Maggie Eismeier, coach

Kelley Hall | Modeling Earthquakes in South Lake Tahoe Basin, 9 a.m.

Ground motions in earthquakes are controlled by the source, the geometry of the basin, and the properties of the materials the waves travel through. Using Nevada Shake Zoning, we studied the impact of the geotechnical data set on ground motion. We analyzed the South Lake Tahoe Basin; specifically examining the impact of a rupture on the south end of the West Tahoe Fault (WTF). The WTF has the area's largest vertical offset and last ruptured approximately 4000 years ago. We compared our limited data set with more comprehensive but theoretical data. Our results showed peak ground velocities values of nearly 200 cm/sec. We also established that minor changes in Vs30 (shear wave velocities to 30 m) created amplifications of a factor of 2 and deamplifications of a factor of 0.5. This implies that dense Vs30 measurements are necessary to fully understand potential hazards resulting from earthquakes in and around basins. Faculty Sponsor: Kevin Pogue

Nicholas Shariat | Optimized Emission of Chelated Rare Earth-Doped Sol-Gels, 9:15 a.m.

Rare earth ions have been used as downshifting phosphors for years because of their 4f electron configurations. However, when these elements are hosted in a medium such as a sol-gel glass, they experience severe luminescence quenching due to ion proximity and solvent effects. This can make fluorescence lifetimes difficult to study and can radically reduce the intensity of emission. By chelating these ions with pyridine-2,6-dicarboxylic acid, we can increase

the separation between them and other ions, as well as solvent molecules. We also attempt to avoid solvent quenching effects by altering the drying process of the sol-gel materials. Luminescence data was gathered using fluorescence spectroscopy and chelate structures were confirmed using single crystal X-Ray diffraction. Faculty Sponsor: Kurt Hoffman

John Nortz | Current Status of Whitman College's Telescopes, 9:30 a.m.

I discuss the current status of observational astronomy from the roof of Whitman's Hall of Science. I will give a technical account of current equipment in use and advances made in the last semester on Whitman's 14" Celestron telescope. I will also present data from a currently on-going project to monitor variable stars from Whitman's telescopes. Faculty Sponsor: Nathaniel Paust

Daniel Smith | Computational Modeling of Star/Disk Systems, 9:45 a.m.

Star/disk systems are typical mechanisms for star formation in the universe. The general understanding of protostellar formation is evolving. Previous research models a typical system as a rotating disk around a central point mass, in which evolution becomes dependent on instabilities that arise in the density configuration of the disk. Our project refines this research by replacing the central point mass with a resolved star. We remotely access the ACISS supercomputing cluster at the University of Oregon to run models with varying non-spherical, differentially rotating central objects. We then consider how the internal structure of the star gravitationally couples to the density structure of the disk and affects its evolution. Faculty Sponsor: Kathryn Hadley

Rebecca Nevin | The Hunt for Recoiling Black Holes: Sifting Through COSMOS Data, 10 a.m.

Recoiling supermassive black holes (SMBHs) have only been detected and studied on an individual basis. The COSMOS survey, including cornerstone data from the Hubble Space Telescope's Advanced Camera for Surveys, provides the unique opportunity to perform a comprehensive search for candidate recoiling SMBHs through the identification of their optical signature (a bright point source offset from the galactic center). Using Galfit, we perform a surface brightness decomposition analysis of 4835 galaxies selected with i magnitudes between 18.3 and 21.5, and redshifts $0.2 < z < 0.5$ to isolate candidates. We model the galaxies with a combination of Sersic profiles and an unresolved

component to reproduce the nuclear light, and we measure the separation between the peaks of the different components. We find several sources with separation larger than 3 and 5 sigma, respectively, with respect to the overall distribution. Faculty Sponsor: Nathaniel Paust

Genes and Germs

Science 151

Paul Hamilton-Pennell, moderator

Tom Vogt, coach

Alexandre Germanos | Redundant Genes in *Arabidopsis thaliana,* 9 a.m.

The genome of the plant *Arabidopsis thaliana* has been sequenced and extensively studied by researchers as a model for plants in general. One family of genes found in this genome encodes PIRLs, proteins related to animal proteins involved in cell signaling and development. Within this family, the genes PIRL1 and PIRL9 are redundant genes involved in pollen development; that is, they are thought to fulfill essentially the same role, and a plant that is missing either of them still functions normally. This project is an attempt to better understand the relationship of these genes. I am inserting a DNA construct of PIRL1 with PIRL9 promoters into plants missing a functional copy of PIRL9, using genetically modified agrobacterium. My hypothesis is that since the two genes are redundant, the PIRL1 construct will be able to fulfill the role of PIRL9, correcting minor phenotype changes seen in PIRL9-deficient plants. Faculty Sponsor: Daniel Vernon

Kendra Klag | Reverse Genetic Analysis of *Arabidopsis thaliana* PIRL6 gene by RNAi, 9:15 a.m.

Sequencing whole genomes has generated enormous amounts of data that tells us how many genes a species has, but not what each gene does. To address this question of gene function researchers can selectively knock out or down gene expression to create organisms with phenotypes that vary from the wild-type, thus providing insight into the role of that gene. Using the plant *Arabidopsis thaliana* my project worked towards generating an understanding of the gene PIRL6 by knocking-down its expression. PIRL6 is suspected to be involved in protein-protein interactions, a key feature of cell signaling pathways. To investigate PIRL6's function I created a specialized gene construct designed to knock-down its expression, introduced the construct into plants, screened for transgenic plants and initiated analysis of its effects. This work was supported by a Whitman internship grant, HHMI funds and an Abshire Award. Faculty Sponsor: Daniel Vernon

Lauren Davis | Investigating the Genetic Basis of Perrault Syndrome: Connecting a Mutation to a Rare Human Disorder, 9:30 a.m.

In 1951, Perrault first reported the association of ovarian dysgenesis and deafness, a rare inherited human disorder now referred to as Perrault syndrome. The syndrome is genetically heterogeneous; previous studies have implicated two different genes in different families. This study aimed to find the genetic basis of Perrault syndrome in a family with no causative mutations in either of the known genes. DNA sequencing revealed a gene that could be responsible for the family's Perrault syndrome: one that codes for a highly conserved part of the COPII complex, which controls budding of vesicles from the endoplasmic reticulum. Yeast, a model eukaryotic system, was transformed with the human mutation to investigate its effects *in vivo.* DNA sequencing, yeast analysis and other techniques used to connect the mutation to the phenotype in this ongoing study will be discussed. Faculty Sponsor: Daniel Vernon

Paul Hamilton-Pennell | Biophilia, 9:45 a.m.

For a small but growing number of "fermentation revivalists," propagating microbes is our creed. Somewhere between art and science, fermentation is perhaps best described as alchemy, and there are few other endeavors that so inspire health, longevity, community and imagination. In honor of my tiny new friends, I share a few simple observations about friendship, tradition, good food and live culture. But beware: You might just catch the bug, which a recent acquaintance called "biophilia": the revelation that, when it comes to germs, the more, the better. Faculty Sponsor: Thomas Davis

American Politics: Civil War to District Lines

Kimball Theatre

Amalya Dubrovsky, moderator

Elana Simon, coach

Kate Kunkel-Patterson | To Live and Die for Dixie: The Origins of Confederate Nationalism, 9 a.m.

About 150 years ago the United States was entrenched in a bloody civil war. Abraham Lincoln's election in 1860 broke the fragile thread that held the South to the Union, and during the winter of 1860-61 11 Southern states seceded from the Union. Southerners had slowly sculpted American nationalism into Southern sectionalism, and then they took the next step to create a distinctly different and uniquely southern, later Confederate, nationalism. Uniting the South in nationalism and secession were feelings of shared victimhood at the hands of the North, a desire to fulfill what Southerners saw as a Divine mission to continue slavery, and a need to protect states' rights. This investigation of the origins and formation of Confederate nationalism illustrates the importance of nationalism in unifying and motivating Southerners during this tumultuous period of American history. Faculty Sponsor: David Schmitz

Sonya Fabricant | How the Affordable Health Care Act Perpetuates Neoliberal Institutions and Ideology, 9:15 a.m.

The Patient Protection and Affordable Care Act is lauded as a revolutionary piece of legislation that will increase access to and quality of healthcare for all Americans. It also passed at an apparently contradictory moment when neoliberalism dominates U.S. policy and discourse. Yet, despite its tendency to disparage welfare programs as a menace to individuals, society and the capitalist economy, neoliberalism has historically depended upon the welfare state to achieve its economic and political goals. My research explores the mechanisms by which the welfare state in general and the healthcare system in particular have historically furthered the neoliberal project, providing context for how the Affordable Care Act preserves neoliberal institutional and ideological dominance in the healthcare system. Decon-

structing this landmark piece of legislation in class-based terms offers valuable insight into its effect on the wealth of the corporate class versus the health of the poor and working class. Faculty Sponsor: Paul Apostolidis

Erik Larson | Limiting Power to Regulate Commerce in United States v. Lopez, 9:30 a.m.

Among the limited powers that the U.S. Constitution grants to Congress, the power to regulate commerce among the states is one of the most important. Over the past 100 years, Congress has sought to use this power to pass a wider and wider range of legislation, from labor laws to drug laws. It has fallen to the U.S. Supreme Court to determine the limits of power to regulate commerce, but its jurisprudence has gone through several major shifts. In one famous case, United States v. Lopez (1995), the Supreme Court overturned a law based on Commerce Clause grounds for the first time since the era of the New Deal. I argue that this decision was the right one from a legal perspective because it re-established limits on a power that Congress had regarded as almost boundless. Faculty Sponsor: Paul Apostolidis

Evan Kleiner | A Congressional Redistricting Algorithm, 9:45 a.m.

For our research project, we asked the question: "Is there some way to automate the redrawing of district lines in each state mandated by the Constitution after every decennial census?" My presentation will consist of a brief overview of the factors considered in redistricting (population, compactness, alignment with city and county lines, etc.) followed by a demonstration and discussion of the software application that we developed to address this problem. I will conclude with a mention of potential political and social drawbacks of automated redistricting. Funding for this project was provided by a Perry Summer Research Award from Whitman College. Faculty Sponsor: Albert Schueller

Amalya Dubrovsky | Obama Conspiracy Theories and the Exclusion of Muslim Subjects, 10 a.m.

After Sept. 11, 2001, American attitudes toward Muslims and Arabs as terrorists intensified. However, in 2008, while still fighting the War on Terror, Americans elected Barack Hussein Obama, a black man of Kenyan descent. Since his election, conservative conspiracy theorists have attempted to reveal Obama as a gay Muslim and non-citizen. My presentation examines how conspiracy theorists' depictions of Obama mirror the damaging way Muslims and Arabs were constructed post-9/11. In both cases, the label of terrorist or non-citizen sticks through the deployment of pathologized sexuality, "improper" race and foreign nationhood. Additionally, my presentation illustrates that the power of these conspiracy theories lies in their ability to impel Obama to renounce their claims, and consequently re-emphasize the normalizing, conservative, anti-Muslim conception of the U.S. patriot citizen that emerged post-9/11. Faculty Sponsor: Melissa Wilcox

Education and Social Change

Reid G02

Haverty Brown, moderator

Elizabeth Lee, coach

Zoe Ingerson | Beyond Language: an Anthropological Analysis of a Dual-Immersion Bilingual Program, 9 a.m.

In recent years, bilingual education has become increasingly controversial, leading to some states' abandonment of such programs, and the model's great success in others. In my presentation, I focus on dual-immersion bilingual programs, which include students from both English- and Spanish-speaking backgrounds in one classroom, without separating the groups. Despite the effort to integrate students of differing backgrounds, why does an achievement gap remain between the groups? Through a series of observations and interviews at Sharpstein Elementary School, I reach beyond questions of language acquisition to more complex ones, exploring how language, culture and power come together and present themselves in the classroom. Due to the subtle manifestations of these forces, the question remains: Do bilingual programs such as this one challenge our status quo or merely perpetuate it in the process? Faculty Sponsor: Jason Pribilsky

Marie von Hafften | Covering Culture: Tips and Challenges for Journalists, 9:15 a.m.

Anthropologists sometimes have the luxury of years to explore social issues in an unfamiliar culture. So what happens when a journalist has a month and a word limit to share a complex story such as the cultural and social climate facing lesbians in Morocco? While studying abroad, I covered this story for the "GlobalPost" and encountered many practical and ethical challenges of representing culture in the process. Through stories about the people I met along the way, such as a classmate who sparked my interest in the story with a desperate plea and the woman I could barely interview without grinding my teeth, I will discuss the basics of how to connect with people and gather information in a foreign country and how to cover controversial cultural topics in journalism. Faculty Sponsor: Jason Pribilsky

Henry Gales | Social Movement Alternatives to State Government, 9:30 a.m.

Scholars have taken many approaches when considering the ways in which activists can learn from the Zapatista movement, a rebel group in Chiapas, Mexico, that works to create community government as an alternative to governance by the state. Few have examined social movements of comparable scale and character as a springboard for understanding the ways in which similar practices can be useful in urban, non-indigenous contexts. I have researched the Frente Popular Francisco Villa Independiente, a Marxist-Leninist housing cooperative in Mexico City. The FPFVI, like the Zapatista movement, has successfully organized thousands of families into safe, livable and democratic communities. The group exemplifies the ways in which the creation of organizations with structure, centrality and defined authority are useful for realizing Zapatista goals of liberation from state domination and other forms of oppression. Faculty Sponsor: Aaron Bobrow-Strain

Haverty Brown | A Multicultural Education: An Investigation of Ecuador's Chota Valley, 9:45 a.m.

In rural northern Ecuador, about 25,000 Ecuadorians of African descent live in the same arid climate where their ancestors were enslaved for almost 300 years. This region, called the Chota Valley, is home not only to Ecuador's most famous *futbolistas* and the mesmerizing *bomba* dance and music, but also a historic edicational movement: *la etnoeducación*, or ethno-education. In a month spent in the Chota Valley during my semester abroad, I participated in and documented the progress and goals of the ethno-education team working to include Afro-Ecuadorian history and culture into the formal education system. My research reveals that this struggle for reform has broad implications: racial, political, cultural and historical. Most importantly, it shows how the ethno-education movement speaks to the idea of *interculturalidad* — an important word in the Ecuadorian lexicon meaning 'interculturalness'— and the real possibility of cross-cultural understanding so necessary in today's globalized world. Faculty Sponsor: Helen Kim

session 2
10:45 a.m.-noon

Beyond the Bubble: Whitman Service Programs
Olin Hall 130
Natalie Pond, moderator
Ben Duchin, coach

Allison Burns, Allison Ramp, Nathan Sany, Kenna Little, Lauren Kutler, Sophie Larsen, Elizabeth Miller and Natalie Pond | Beyond the Bubble: Whitman Volunteers Tell Their Stories, 10:45 a.m.

Led by the community service interns in the Student Engagement Center, this panel presents an authentic perspective of what it means to volunteer beyond the "bubble" of Whitman College. Interns will invite their volunteers to do much of the talking to share the behind-the-scenes work of being someone's best buddy, from delighting a child with a rendition of "The Very Hungry Caterpillar" to helping rebuild New Orleans. The panel includes student representatives from all six community service programs (Spring Break Service Trips, the Buddy Project, Adopt-A-Grandparent, Story Time Project, the Mentor Program, and College Coaches), all of whom will give new resonance to the names of programs talked about daily around campus. Whitman students donate thousands of hours a year to service; this panel seeks to honor that time and share its implications. Faculty Sponsor: Noah Leavitt

Japan: Then and Now
Olin Hall 157
Karin Tompkins, moderator
Olivia Kipper, coach

Josephine Hoyne | Gender Conceptions in the Golden Era of Japanese Literature: Sei Shonagon's Gender Ambiguous Representation of Women's Writing, 10:45 a.m.

The Heian era of Japan (794-1185) is considered the golden age of Japanese literature, due in part to the emergence of women's literature and the numerous canonical titles produced by these women: "The Tosa Journal," "The Kagero Diary" and "The Tale of Genji." Whereas most works of women's literature from this era follow a preconceived feminine voice with regard to alphabet, genre and content, one work, "The Pillow Book" by Sei Shonagon goes against these gender constructs in order to create a highly gender ambiguous work of Japanese literature that is still widely read in Japanese society. My presentation will explore Shonagon's intentions for contesting these gendered ideas of literature and what she may have accomplished by doing so. Faculty Sponsor: Akira Takemoto

Elizabeth Lee | Witch Without a Body: Japan's Mountain Crone Reborn, 11 a.m.

The mountain crone, or yamamba, is a well-known monster in Japanese folktales. An eerie old woman living in the mountains, she chases down humans and gobbles them up. The yamamba has haunted the Japanese imagination and appears in both pre-modern and modern stories. Ohba Minako (1930-2007), one of Japan's most respected woman writers, brings back the yamamba in her short story, "The Smile of a Mountain Witch" (1976). The yamamba re-appeared at the height of the women's liberation movement, which emphasized liberation and celebration of the

female body. I argue that Ohba challenges the liberation movement by re-writing the yamamba as a figure without a body, thereby transcending both the bodily liberation that feminists stressed and the bodily domination that society supposedly exerts over her. I stress that Ohba questions the physical nature of yamamba and the entire notion of the "body" in Japanese imagination. Faculty Sponsor: Yukiko Shigeto

Sara Portesan | Japanese Water and Ink Paintings, 11:15 a.m.

After a wave of interest in Japanese woodblock prints (*moku hanga*), *Suiboku-ga*, literally "water and ink pictures," have influenced American artists and, in the past 75 years, exhibits of Muromachi period *suiboku-ga* have appeared frequently in U.S. museums. My introduction to *suiboku-ga* landscape paintings began with a Japanese aesthetics class and continued during my junior year abroad in Kyoto, where I enrolled in a class taught by former Whitman Professor Keiko Hara. Hara encouraged us to identify Japanese cultural icons and to engage in new art-making techniques. Her introduction to *suiboku-ga* techniques helped me see spatial relations in a very different way, transforming how I think about space, paper, brush work and ink. My presentation introduces *suiboku-ga* and shows how this tradition has expanded my cultural vocabulary and guided the way I look at the world and produce paintings that help me explore emotive and imagined spaces. Faculty Sponsor: Akira Takemoto

Yukiko Ueda | College Education in Kyoto and Walla Walla: a Look at Doshisha University and Whitman College, 11:30 a.m.

Opinions about Japan by Americans and observations about the United States by the Japanese have often led to interesting and frustrating stereotypes that people remember and repeat. Discussions about Japanese education often echo ideas that come from studies done in the late 1970s and early 1980s when Americans read books like "Japan as Number One: Lessons for America." At the same time, people in Japan read books and articles that proclaimed the unparalleled excellence of the American system of higher education. My presentation is an attempt to highlight those stereotypical images of higher education in Japan and the United States. I will then suggest ways to correct some of these out-of-date images. I will do this by distilling my experiences at Whitman College and comparing them to my experiences at Doshisha University. Faculty Sponsor: Akira Takemoto

Karin Tompkins | *Ijime:* Bullying in Japanese Schools from Educators' Perspectives, 11:45 a.m.

According to Japanese and American news media, *ijime*, often translated as "bullying," has reached epidemic proportions in Japanese schools. From a foreign perspective, *ijime* seems contrary to perceived Japanese cultural attentiveness to group harmony. American newspapers have cited stereotypical, "easy" explanations for this complex issue: that Japanese culture is so focused on group cohesion that cultural norms have become unforgiving of nonconformity, and that the strict school system forces constant competition. In gathering survey and interview responses from American English teachers and Japanese educators, I have investigated these groups' perceptions of the *ijime* epidemic. Through data analysis, I hope to determine how teachers conceptualize and explain this controversial social problem and whether they rely on prevalent notions about Japanese society in doing so. Faculty Sponsor: Akira Takemoto

Lava Flows

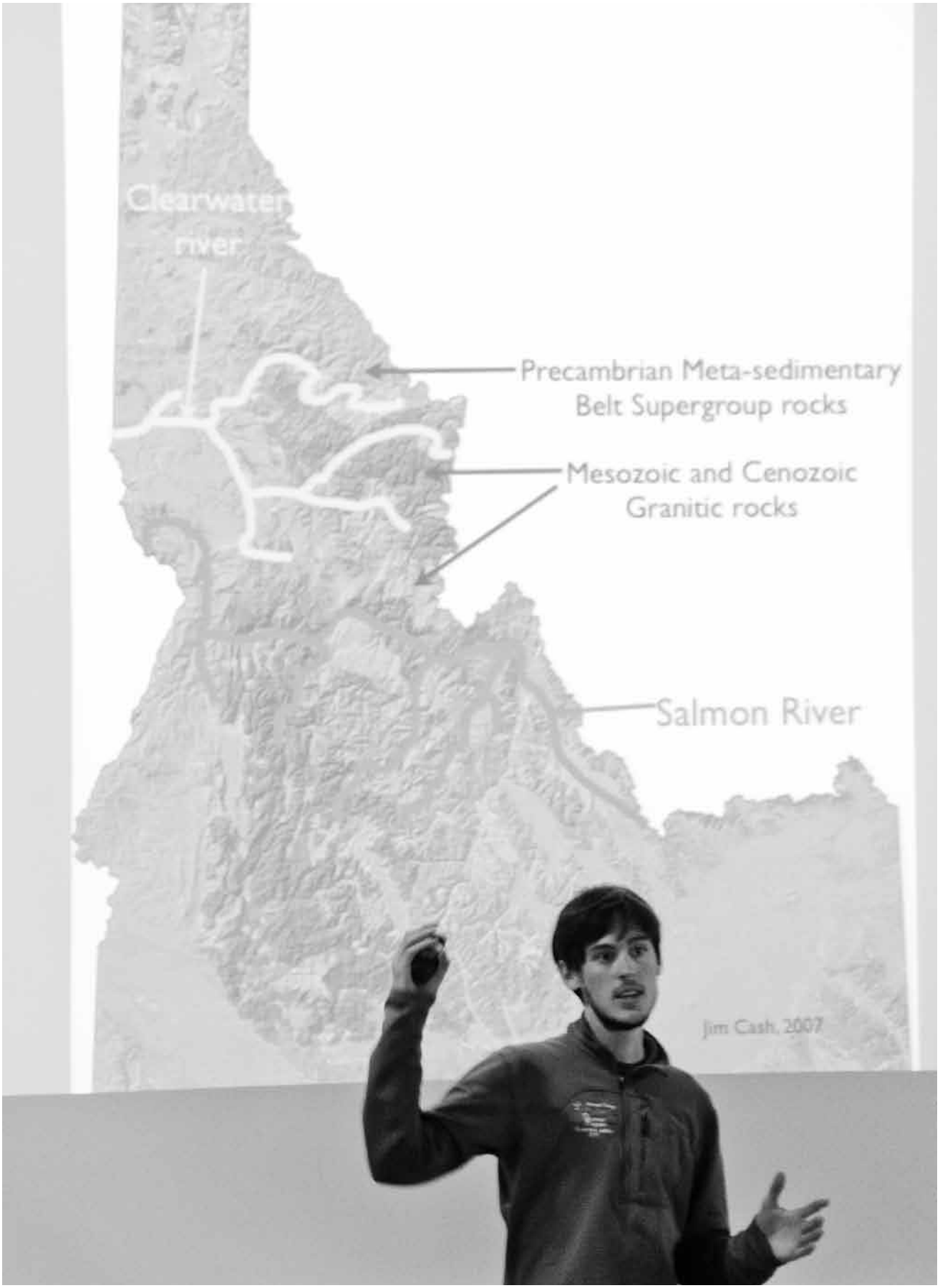
Gaiser 159

Matthew Morriss, moderator

Zoe Randol, coach

Cassandra Smith | Crystal Growth in Experimental Lava Flows, 10:45 a.m.

Within the molten interior of lava flows, crystal growth can both affect the motion of the flow by increasing viscosity and record the conditions of the flow interior during cooling. Through the Syracuse University Lava Project, I participated in the creation of large scale, experimental lava flows. I recorded flow parameters with video and infrared imaging, imaged crystal chains and obtained chemical analysis of the Mg-Fe rich silicate minerals that formed. Experimental crystal chains were Mg-Fe rich whereas natural chains are more calcic. However, the experimental chains physically mimicked natural chains. An understanding of how and where these crystals develop will help in under-


Clearwater
river
Precambrian Meta-sedimentary
Belt Supergroup rocks
Mesozoic and Cenozoic
Granitic rocks
Salmon River
Jim Cash, 2007

standing the interior processes of molten lava, which is nearly impossible to study in nature. This research was funded by the Syracuse University Lava Project and the Jessie Page Heroy Fund. Faculty Sponsor: Kirsten Nicolaysen

Adele Thornton | Water, Carbon Dioxide, Sulfur and Chlorine: Controls on the Crystallization and Properties of Magma Beneath Volcanoes, 11 a.m.

Magma beneath active volcanoes contains dissolved volatile components – primarily water, carbon dioxide, sulfur, and chlorine. When magma migrates upward, decreasing pressure promotes the bubbling out of volatiles into separate gas phases that ultimately drive volcanic eruptions. Dissolved volatiles and associated gas phases not only control the properties and eruptive behavior of magma, but also affect mineral nucleation and growth. I conducted experiments to simulate volatile-enriched magma at depth, providing insight into the complex relationships between melt composition, mineral growth and the volatiles water, carbon dioxide, sulfur and chlorine. This research was supported in part by the National Science Foundation award EAR-0836741 to James D. Webster of the American Museum of Natural History. Faculty sponsor: Kirsten Nicolaysen

Katherine Chapman | Lightning-Altered Rocks in the Western United States, 11:15 a.m.

Lightning strikes the earth approximately 40-50 times per second with an enormous amount of energy. Materials such as rock, sand and soil can reach temperatures over 2000°C and melt when struck. The material then cools too fast for mineral crystals to form, creating dark green-black glass instead. This glass is commonly found either as a tube in sand/soil or a film over rock surfaces and referred to as a fulgurite. Presented here are several rocks that have long white streaks across them which, in most cases, jump from boulder to boulder in the field. There is no glass visible to the naked eye on the surface of these samples, so various chemical and optical analyses have been performed to 1) compare these samples to known fulgurites and 2) gain insight into what causes the color differentiation in these streaks- if not lightning, then what? Faculty sponsor: Bob Carson

Will Bender | Characterizing Unstudied Granitoids from the Snake Range, 11:30 a.m.

Nevada's Snake Range exposes several 150-160 mya magmatic intrusions. The Range is one of the best examples of a mid-crustal metamorphic complex, revealed by its regional-scale, low-angle normal fault, or detachment fault. However, the magmatic rocks have been largely overlooked. This particular intrusion consists of granites, diorites and even gabbroic rocks. Overall, this compositional diversity is surprising over such a small geographic area. Moreover, the minerals record the cooling that occurs as extensional faulting and erosion bring the deeper intrusion to the surface. To understand the geochemical evolution of such a chemically varied rock assemblage, I measured rock and mineral compositions and textures using electron microscopy and geochemical analyses. With this information it is possible, for the first time, to interpret the chemical variation within this pluton and propose formative models. This research was funded by the Keck Geology Consortium, Whitman College and the NSF. Faculty sponsor: Kirsten Nicolaysen

Matthew Morriss | Paleoclimatic Implications of Glacial Sequences in Mongolia, 11:45 a.m.

The timing of late Pleistocene glacial advances in central Asia is less well understood than of those in the Himalayas. Because central Asia receives much of its moisture from Westerlies off the North Atlantic, glaciations in Mongolia may have been coeval with European glaciations – in contrast to the monsoon-fed Himalayas. Two glaciations have been defined using relative age dating of moraine sequences. These glaciations likely correlate to Marine Isotope Stages 2 and 6, which correspond to glacial advances in Europe and North America. Samples of granitic rocks were gathered from terminal moraines in Mongolia for cosmogenic nuclide analysis. With these dates, we hope to link the Last Glacial Maximum and Penultimate Glacial Maximum in Mongolia with lake cores from the region (e.g. Lake Baikal). This new data on glacial advances will update paleoclimate models for central-Asia. Faculty Sponsor: Robert Carson

Animal Behavior

Science 100, Brattain Auditorium

Jordan Benjamin, moderator

Maura Barstead, coach

Jesse McKeen-Scott | Does Road Noise Affect Song Structure of the Chestnut-Backed Antbird?, 10:45 a.m.

Avian vocalizations are an important form of communication used for social interactions, territorial defense and mate selection. The introduction of anthropogenic noise to natural areas however can be problematic for avian communication: anthropogenic noise masks birdcalls and birds are not evolutionarily adapted to compete with these noises. Research suggests that certain species of birds are able to modify their song in the presence of anthropogenic noise to maintain effective communication. I recorded songs of the Chestnut-backed Antbird at varying distances from a major roadway in Carara National Park, Costa Rica and analyzed three song traits to see if individuals were modifying their songs in response to the road noise. While I did not find evidence for such song modifications, my research establishes an important baseline from which to further monitor the effects of road noise on Chestnut-backed Antbirds in this national park. Faculty Sponsor: Timothy Parker

Thomas Glass | Fish Swimming: A 3D Video Analysis of Fish Foraging Behavior, 11 a.m.

Stream-dwelling salmonids usually employ a sit-and-wait foraging strategy. This is defined by a fish holding a steady position ("focal point"), to which it returns following short foraging and aggression forays. However, there is a large amount of variability in this behavior. For example, some fish move farther to capture food, some go downstream, some go upstream and some maintain more than a single focal point. Accurately identifying the reasons for the variable occurrence of these different behaviors is critical for creating robust foraging models and implementing effective stream habitat remediation strategies. Among the likely underlying causes of variable behavior is water velocity, the effects of which, though heavily studied, are of yet uncertain. Using 3D-videogrammetry techniques, I analyzed these effects in an attempt to better describe and understand the sit-and-wait foraging strategy. Faculty Sponsor: Timothy Parker

Natalie Jamerson | Spatial Predictors of Bird Damage on Cherry Orchards, 11:15 a.m.

This summer, I worked as a USDA field technician to explore bird damage to cherries. I examined spatial differences in damage to determine foraging preferences of birds. I identified variables such as orchard isolation that influence damage density. These assessments will enable fruit growers to more efficiently decide how to manage bird pests. For my Biology-Environmental Studies senior thesis, I explore how land use around cherry orchards influences the density of birds and, thus, the density of damage. I compare adjacent landcover types such as residential and vineyard to determine correlative damage patterns. Resulting trends illustrate the advantages in decreasing landscape features that are attractive to birds. With this understanding of habitat preference and foraging strategies, farmers can employ spatially effective deterrents to decrease costs of unsuccessful management and increase their profit. Faculty Sponsor: Timothy Parker

Allyson Gibson | Not Monkeying Around: The Bushmeat Crisis on Bioko Island, 11:30 a.m.

During January 2013, I participated as a research assistant on the annual Caldera Expedition, a three-week backcountry excursion in the Gran Caldera of Bioko Island, Equatorial Guinea. We completed a census of seven endangered primate species on the island including the Drill, Red Colobus and Black Colobus. The mountain terrain of the Gran Caldera provides a potential natural barrier of protection for these species from habitat destruction and hunting, but counts are necessary to monitor the impact of bush meat poaching on populations. Because the Whitman community lacks a history of involvement with this program, this presentation is intended to build interest in the Bioko Biodiversity Protection Program and generate awareness about the prevalence of bush meat poaching of these endangered primates. Faculty Sponsor: Delbert Hutchison

Jordan Benjamin | There and Back Again: A Serpentologue's Tale from the Frontlines of Snakebite Medicine in Africa, 11:45 a.m.

Snakebite, recently declared "the most neglected of all tropical diseases," is a complex biomedical and socioeconomic issue whose greatest burden falls on those living well below the poverty line in developing nations around the world. In Africa, this problem is compounded by a severe shortage of critical antivenom, lack of confidence in healthcare infrastructure by local nationals and dearth of pertinent knowledge by medical personnel. After studying venomous snakes of Africa, envenomations and wilderness emergency medicine for a number of years, I decided to become a snakebite doctor and had the unique opportunity to work as a remote medic and envenomation medicine specialist on the frontlines of human-snake conflict in West and East Africa from June 2012 - January 2013. Come and learn about the problem of snakebite in sub-Saharan Africa, the difficulties of treating snakebite in a remote medicine environment, and what was discovered along the way. Faculty Sponsor: Kate Jackson

Marine Life

Science 151

Nicholas Chow, moderator

Tom Vogt, coach

Gemma Wallace | Cold Tolerance as a Climatic Adaptation in a Broadly Distributed Marine Crustacean, 10:45 a.m.

The intertidal copepod *Tigriopus californicus* was used as a model system to study how local adaptation influences the cold resistance of broadly distributed species. Among five populations spanning 18 degrees in latitude, three metrics were used to compare cold tolerance: post-freezing recovery, chill coma recovery time (CCR) and the temperature of chill coma onset (CTmin). Recovery rates following freezing were faster in copepods from colder northern latitudes. Likewise, northern populations exhibited shorter chill coma recovery times and lower chill coma onset temperatures. Our results provide evidence that populations within a single species can display strong local adaptation to spatially varying climatic conditions. Thus it would be valuable for bioclimate models to account for local adaptation when forecasting biological responses to climate change. This research was funded by an NSF REU Fellowship at Friday Harbor Laboratories, University of Washington, and was mentored by Dr. Chris Neufeld. Faculty Sponsor: Paul Yancey

Ethan Robertson | Exploration of Effects of Reef Waters on Coral Skeletal Chemistry, 11 a.m.

Environmental pressures adversely affect coral growth and survival. To explore this issue, research is underway in Mo'orea, French Polynesia and at Whitman, over the last two years. As part of this study, my research group examines coral skeletal composition and morphology across genera. In order to separate environmental from organismal influences, we performed experiments to characterize the chemistry of the waters surrounding the coral samples. The experiments measured the total alkalinity, pH, salinity, conductivity, magnesium and calcium levels of water samples at a variety of depths, across all sampling locations. Taken together, preliminary results from these experiments confirm little variation in water chemistry with either depth or sampling location. This indicates that differences in elemental composition and morphology within the coral skeleton are likely the result of processes at the organismal level, rather than the effects of the surrounding ocean environment. Research supported by Kristine Johnson and Tim Dattels. Faculty Sponsor: Allison Calhoun

Nilce Alvarez | Analysis of Trace Elements Across Reef-Building Coral Genera, 11:15 a.m.

Reef-building corals are home to one-third of all marine flora and fauna. Hard calcium carbonate skeleton created by the coral provides the building block of the coral reef. The variation of metals such as calcium, strontium and magnesium, incorporated into the coral skeleton, remains unknown across genera under the same growth regimes. Moreover, in a constantly changing world, it has become urgent to understand the influence of shifting oceanic conditions on coral reefs and their biogeochemistry. Samples from two consecutive years from Mo'orea, French Polynesia, and historical samples from the Smithsonian Institution were used and examined by Environmental Scanning Electron Microscopy and Energy Dispersive Spectroscopy for imaging and data analysis. This study will help widen the complex and insufficiently explored comparative coral skeletogenesis and the impact of skeletal composition and morphology on coral survival and health across genera. This research was supported by Kristine Johnson and Tim Dattels. Faculty Sponsor: Allison Calhoun

Nicholas Chow | Chicken of the Sea: What Feathers Can Tell Us About Corals, 11:30 a.m.

Coral reefs may be among the ecosystems most vulnerable to climate change, responding adversely to numerous stressors including ocean acidification, rising sea level and ocean temperatures, but the question remains as to the specific processes affecting living coral colonies. In samples of corals extracted from reefs in Mo'orea, French Polynesia, there has been evidence for the overgrowth of live corals by uncharacterized encrustations that may be adversely affecting coral populations. My study focuses on characterizing the chemical and morphological aspects of these encrustations to determine their origin and assess their role on coral populations. In my experiment I use organic protein matrices extracted from feathers to replicate the process of aragonite precipitation in coral exoskeletons. This data, in conjunction with seawater analysis, is intended to define a process by which the abiotic precipitation of aragonite can be studied. Research possible through support from Kristine Johnson and Tim Dattels. Faculty Sponsor: Allison Calhoun

"Quality" TV: "Peaks" and Hollows

Maxey 104

Griffith Jones, moderator

Madeleine Hale, coach

Nathan Lessler | "Twin Peaks" and Legitimization of the Television Drama, 10:45 a.m.

"She's dead … wrapped in plastic." So began "Twin Peaks," a 1990 prime-time television drama that has often been hailed as "like nothing else on television." If this claim to fame has become cliche, it's because the claim is true. Even now, two decades after "Twin Peaks" originally aired, there is nothing quite like it on television. It is unlikely there ever will be. For a brief time, the show was a national phenomenon, but before long its ratings plummeted and, after two seasons, the series was cancelled. Nevertheless, "Twin Peaks" had a longlasting effect on dramatic prime-time television. In my presentation, I explore the significant role "Twin Peaks" played in the rise of "quality" television and the legitimization of television that has occurred over the past two decades. Faculty Sponsor: Anne Petersen

Meleeya Schwartz | The Hidden Quality of "Pretty Little Liars," 11 a.m.

On the surface, ABC Family's "Pretty Little Liars" may be seen as a shallow teen drama and consequently written off. Its soap-opera nature and illegal activities, as well as the youth of its actors, all suggest "throwaway" television. I argue that while "Pretty Little Liars" possesses the makings of a teen soap opera, it still possesses many aspects associated with so-called quality television, including filmic aesthetics, complex narrative and prominent showrunner. "Pretty Little Liars" offers teenage melodrama while employing elements found on arguably higher quality shows associated with premium cable. "Pretty Little Liars" has found a way to confuse the idea of strict quality, since the show uses both facets of quality and non-quality to create a new blueprint for teen dramas. Faculty Sponsor: Anne Petersen

Stephen Toyofuku | Interrogating Quality Television, 11:15 a.m.

In my presentation I explore aspects of quality surrounding HBO's Prohibition-era drama "Boardwalk Empire," and consider the channel's current formula for making quality television. "Boardwalk Empire" contains all the traditional aspects of high-quality television such as a filmic appearance, talented cast, complex, challenging narrative, beautiful cinematography and the use of realism. This realism involves production details which cost HBO $65 million. Spending such large sums on a single series reflects HBO's desire to compete with other "quality" programming on AMC, Showtime, Fx and even major network television. "Boardwalk Empire" represents a new formula for quality television: a quality historical series that spares no expense. Faculty Sponsor: Anne Petersen

Griffith Jones | The Quality of "True Blood," 11:30 a.m.

"True Blood" is the most popular HBO show currently on air, but it does not fit into the channel's normal brand of "quality television." Or, at least not exactly: Copious amounts of sex and gore distinguish "True Blood" from network television. Viewers return for each new episode because of cliffhangers and melodramatic stories. The use of vampires as potential allegory for myriad minority groups makes "True Blood" seem "deep." I argue that while the show contains vestiges of quality in its blatant subtext, its focus on sex and melodramatic narrative is its primary appeal. The mixture of low-quality content with high-quality aesthetics and effects are what make "True Blood" so successful, revealing that legitimate television is not as dependent on depth as it is on the appearance of "quality." Faculty Sponsor: Anne Petersen

Jazz Influences

Kimball Theatre

Rachel Quednau, moderator

Florence LeBas, coach

Annelise Osterberg | The Influence of Jazz on Modern Art, 10:45 a.m.

Early American modernist painter Arthur Dove believed abstract painting could attain an emotive power comparable to that of music — in particular, jazz. "Art is nearer to music, not the music of the ears, just the music of the eyes," he said. Fellow modernist Stuart Davis celebrated the music by adopting a new, jazz-inspired visual language with which to examine and convey modern American life. In my presentation I explore several instances and ways that jazz has had an observable influence on modern American and European artists. The music itself has inspired these artists to portray the world of jazz visually, using jazz artists and jazz scenes as subjects. Other artists, influenced by the innovative techniques of jazz improvisers, such as harmonic layering, polyrhythms and tonal experimentation, employed these same concepts in their own visual creations, often to great invention and success. Faculty Sponsor: Keith Raether

Paul Eschbach | The Jazz Aesthetics of Light-Gloving, 11 a.m.

"Gloving" or "light-gloving" is the art of manipulating light by means of the hands. Typically, LED microlights are affixed to stretch gloves. The placement of lights on the gloves varies; thumb lights and palm lights are optional. My multimedia presentation links the improvisational movement techniques of light-gloving to the improvisational lines,

digressions and interpolations a jazz musician introduces and explores in a solo. In the video portion of my presentation, I and Tom Shellum each take "solos" using light glove techniques on the composition, "Rear Control," recorded by a quartet led by drummer Matt Wilson. Our independent styles of light-gloving are much like the independent lines of improvisation between one jazz musician and another. Each of us picks up on different cues from the music. We are improvising on improvisation. Light-gloving is, after all, an improvisational art form; like jazz, its essence is found in spontaneous creation. Faculty Sponsor: Keith Raether

William Seymour | Hip-Hop Seen Through the Lens of Sun Ra's Musical Ontology, 11:15 a.m.

Herman Poole Blount, better known as Sun Ra, was an enigmatic, avant-garde jazz musician, poet and philosopher. Though his life ended in 1993, his unique musical ontology provides a compelling framework of analysis for the flourishing genre of hip-hop music. Examining hip-hop through Sun Ra's philosophical lens reveals how the genre has often placed limitations upon itself. Seminal 1980s and early '90s emcees failed to realize the fullness of African mythic flexibility. Instead, their music was indebted to the negative social codes and stereotypes surrounding their demographic. In the late '90s, this trend was reversed by a wave of avant-garde hip-hop artists who followed in the mythic footsteps of Sun Ra. Unfortunately, their fresh angle was, and still is, inhibited by the difference between North American materialist perspectives and African mythic flexibility. My presentation explores this conflict and the potential future of hip-hop music. Faculty Sponsor: Keith Raether

Rachel Quednau | Jesus Walks: Hip-Hop as Black Liberation, 11:30 a.m.

Hip-hop, a genre often criticized for its profanity and violence, has also managed to produce profoundly religious sentiments, even through such mainstream artists as Kanye West and Jay-Z. My presentation examines the music of these artists through the lens of Black Liberation Theology. With a combination of theological, historical and sociological methods and a firm grounding in the music of West and Jay-Z, I advance the theory that hip-hop is a liberating force for young African Americans. The spiritual sentiments found in this music can be understood through the lens of a black liberation theology wherein Jesus walks with downtrodden youth living in poor neighborhoods and provides a source of hope and redemption, even in the face of the immense struggles in their communities. The voices of the artists communicate—often bluntly and sometimes enigmatically—the realities of that life and the liberating God who exists in that world. Faculty Sponsor: Courtney Fitzsimmons

Television and Its Discontents

Reid G02

Jade Blake-Whitney, moderator

Richael Best, coach

Jessica Good | We Are All So Raven: Race as a Disney Commodity, 10:45 a.m.

"That's So Raven" (2003-2007) was the first Disney show to feature a non-white lead, and one of the most successful programs ever to air on the Disney Channel. I will frame the consumer success of "That's So Raven" as evidence that race is packaged and sold like a commodity through the whitewashing and stereotyping of race. Disney creates an overly simplistic picture of race in "That's So Raven" by promoting superficially normalized representations of blackness that avoid the complexities of life for black youth in America. I argue "That's So Raven" presents a deceptive picture of the American Dream within a post-racial America to promote and sustain a capitalistic, white-dominant society. "That's So Raven" promotes hegemonic ideologies that are detrimental to young girls' perception of, and relations to, race, class and gender, entirely for the purpose of consumer consumption. Faculty Sponsor: Anne Petersen

Sally Boggan | Depravity on Display: Equal Representation in "It's Always Sunny in Philadelphia," 11 a.m.

"It's Always Sunny in Philadelphia" (2005-present) follows a morally deplorable group of friends who own a bar. Although not written into the earliest pilots, a female protagonist named Sweet Dee was added by the show's creators by the time the series aired. In my presentation, I argue that, unlike traditional female characters on sitcoms, Dee does not act as a moral guide or judge for the rude, self-centered male characters. Rather, she is just as perverse as the rest of the gang and is in no way held back by gender stereotypes prevalent in other sitcoms. Despite Dee's strong role, the satirization of typical gender conventions is not lost; the male characters often intentionally ignore Dee simply because of her gender. Ultimately, "It's Always Sunny in Philadelphia" offers a critique of traditional gender roles in sitcoms and suggests that women can keep up with men in the depravity department. Faculty Sponsor: Anne Petersen

Sara Graham | Documenting the Eccentric and Grotesque: TLC and "My Big Fat American Gypsy Wedding," 11:15 a.m.

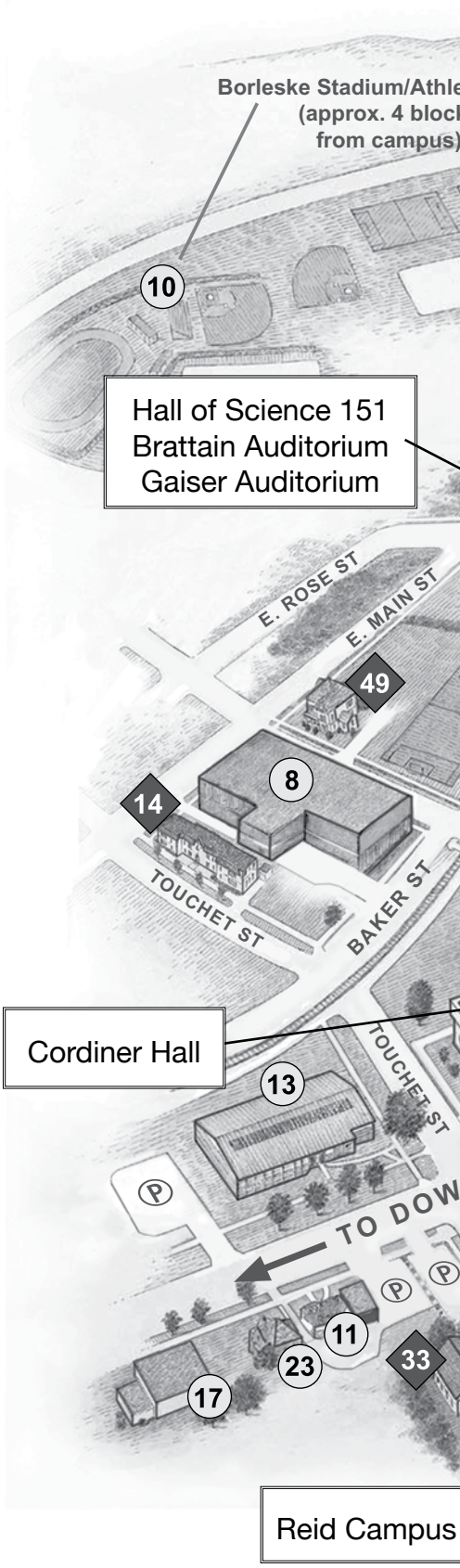
Reality television on TLC follows people throughout their daily lives in an effort to reveal the human experience to viewers. Many docu-reality series on TLC focus on subcultures of America, including polygamous families, Muslims, the Amish and American Romanichal gypsies. Other programing revolves around experts such as Stacey and Clinton on "What Not to Wear." Targeting a primarily female audience, TLC programs reinforce commonly held ideas about femininity. "My Big Fat American Gypsy Wedding," a docu-reality show, introduces the American public to the Romanichal gypsy culture by focusing on the weddings, birthdays, baptisms and other celebrations in Romanichal subculture. I argue that "My Big Fat American Gypsy Wedding" exemplifies programming on TLC that enforces a particular femininity promoted by the channel. This femininity, while focused on domesticity, is educated, urban, optimistic and interested in the world. Faculty Sponsor: Anne Petersen

Jade Blake-Whitney | "The Cleveland Show": Hit or Miss? Fox Doesn't Care!, 11:30 a.m.

Television today is filled with mediocrity. Shows have poor acting, predictable plots, embarrassingly cheesy one-liners and weird themes. These shows get negative critiques, lose viewership and usually disappear after a single season. But then there is "The Cleveland Show," a spinoff show that chronicles the life of a middle-aged African American man named Cleveland Brown and his family. "The Cleveland Show" epitomizes this mediocrity. It receives poor reviews, and critics harp on its inability to stray from the plot of its counterpart, "Family Guy." Yet, the show is enjoying its fourth season and continues to have a slot in FOX's "Animation Domination" on Sunday nights. My presentation explores the reality of television today as low-risk media and how it focuses more on commercial profit from advertising than on quality, an equation that "The Cleveland Show" exemplifies. Faculty Sponsor: Anne Petersen

venues

1 Admission and Financial Aid (Penrose House)
2 Alumni House
3 Amphitheatre
4 Anderson Hall (residence hall)
5 Asian Studies House (interest house)
6 Athletic Complex (outdoor fields)
7 Baker Faculty Center
8 Baker Ferguson Fitness Center/Harvey Pool
9 Beta Theta Pi (fraternity house)
10 Borleske Stadium
11 Boyer House
12 Bracher Observatory (astronomy facility)
13 Bratton Tennis Center
14 College House (residence hall)
15 Community Service House (interest house)
16 Cordiner Hall (auditorium)
17 Dance Studio
18 Das Deutsche Haus (interest house)
19 Environmental House (interest house)
20 Fine Arts House (interest house)
21 Fouts Center for Visual Arts
22 Global Awareness House (interest house)
23 Glover Alston Center (intercultural resources, programs)
24 Hall of Music (includes Chism Recital Hall)
25 Hall of Science (includes Brattain and Gaiser auditoriums)
26 Harper Joy Theatre (includes Alexander and Freimann stages)
27 Hunter Conservatory (rhetoric and film studies/debate, Kimball Theatre)
28 Jewett Hall (residence/dining hall)
29 La Casa Hispaña (interest house)
30 Lakum Duckum
31 La Maison Française (interest house)
32 Lyman House (residence/dining hall)
33 Marcus House (residence hall)
34 Maxey Hall (social sciences)
35 Memorial Building (administration)
36 Multi-Ethnic Center for Cultural Awareness (MECCA/interest house)
37 North Hall (residence hall)
38 Olin Hall (humanities and mathematics, technology services)
39 Organic Garden
40 Penrose Library
41 Phi Delta Theta (fraternity house)
42 Physical Plant Services
43 Prentiss Hall (residence/dining hall)
44 Reid Campus Center (student services/café)
45 Sheehan Art Gallery
46 Sherwood Athletic Center (climbing wall)
47 Sherwood House (president's residence)
48 Sigma Chi (fraternity house)
49 Tamarac House (residence hall)
50 Tau Kappa Epsilon (fraternity house)
51 Tekisuijuku (interest house)
52 Welty Center (counseling and health services)
53 William O. Douglas Hall (residence hall)
54 Writing House (interest house)



Whitman College

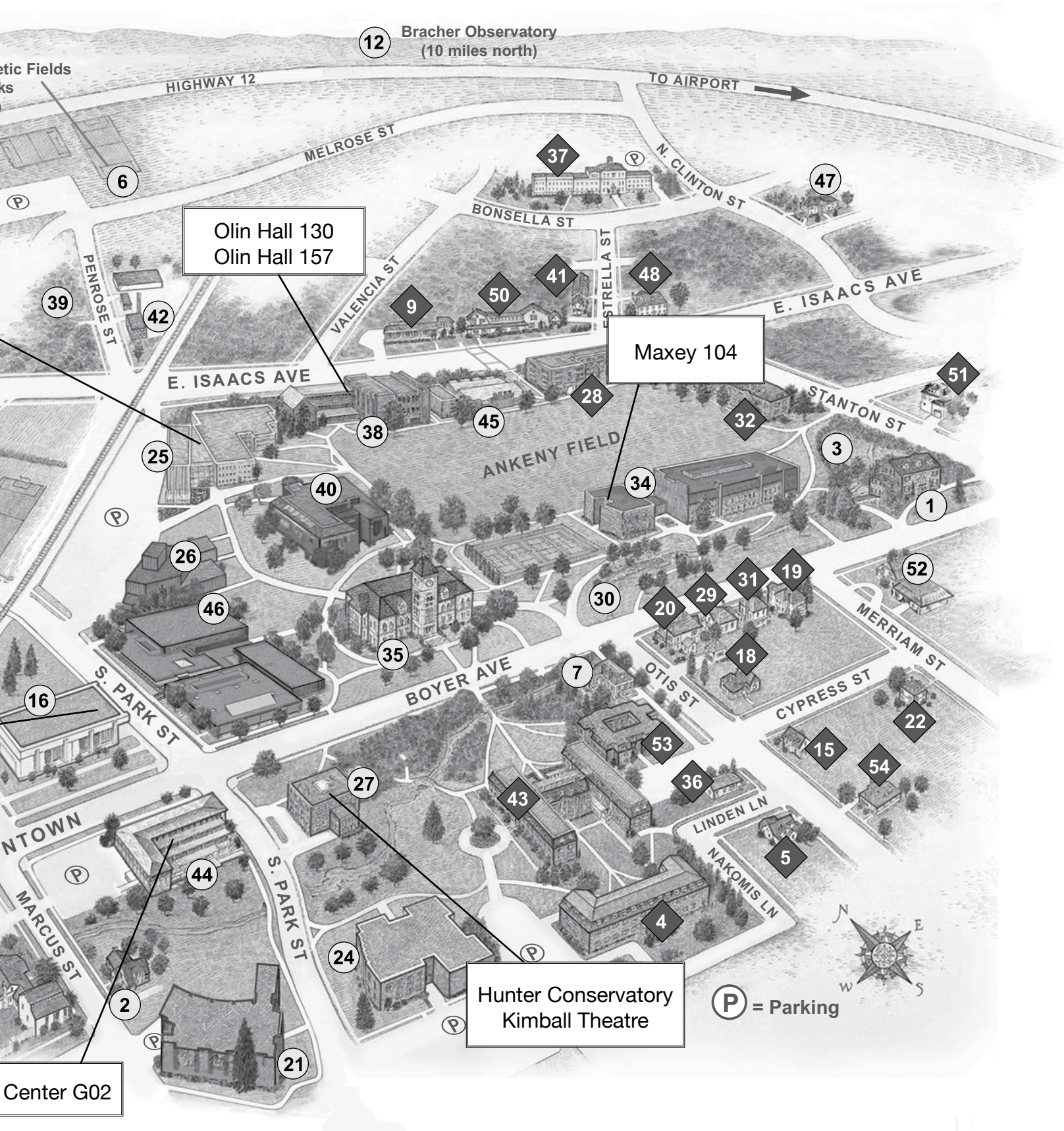


Photo by Erik Lyon '12

The Semester In the West truck and trailer drives past another trailer stacked with mirrors at the Ivanpah solar thermal power plant site in Southern California. Each mirror is part of a heliostat, a device that tracks the sun to reflect light and heat to a central "power tower" (the structure peeking out behind the mirror).

National Public Lands Radio

1-2 p.m.

Cordiner Hall Balcony

Semester in the West students bring their field experiences to life in short audio podcasts and one film documentary short.

Allison Bolgiano | Linking Vulnerabilities: Environmental and Emotional

Although we recognize the vulnerable state of our environment in the face of climate change, we often do not let environmental stories go beyond fact and become feeling. This is the challenge facing environmental writers.

Cathryn Klusmeier, Sam Hinkle, Chase Martin | An Eclectic Character

In our film we take you to the treasured yet divisive landscape of Canyonlands National Park in southeastern Utah, where we introduce you to the seemingly polarized men and women whose lives share more common ground than meets the eye.

Nevé Baker | Wolf Wars: an End in Sight?

Across the West, wolves and ranchers are locked in contentious conflict. But a collaboration between ranchers and environmentalists in Blaine County, Idaho, is finding creative and meaningful solutions.

Kari Paustian | Bigger Isn't Always Better: Draft-Powered, Organic Farming in Northern New Mexico

The world may be dependent on industrial agriculture, but this family, with its team of mules, gaggle of goats and few acres of well-watered soil is making a successful go at small-scale farming.

Ysabel Diaz | Connecting with a Landscape

A local cowgirl and a traveling RV couple share stories of their love for the landscape near Canyonlands National Park, illustrating how, though they interact with the land in distinctly different ways, the relationships they each create are genuinely unique.

Keenan Hilton | Thinning Conflict: Collaborative Approaches to a Natural Resource Economy

In northeastern Oregon, Wallowa Resources, a small nonprofit organization, collaborates with environmentalists and conservative community members to arrive at a land-use ethic that enhances community and forest health.

Libby Fones | Brainier than Bacteria?

Biological factors unique to humans could enable us to minimize the effects of climate change, but there are many obstacles standing in the way of doing so.

Jenni Doering | Self(ish)-Preservation: The Ways We Need Wilderness

The experience of being in the wilderness sparks our creativity, satisfies an essential human need to connect with the land and might even be what "saves" us.

Marijke Wijnen | Climate Change, Beaver and a Hairdresser

Environmental narratives often present political involvement and lifestyle changes as the only means for individuals to combat climate change, but one hairdresser in Colorado, armed with an unsuspecting mammal, finds a unique way to confront this daunting problem.

Collin Smith | La Cienega de Santa Clara: A Wastewater Oasis in an Era of Climate Change

A geopolitical accident revived a wetland in a once-barren corner of the Colorado River Delta in Sonora, Mexico. But in an era of climate change and dwindling water reserves, even the salty, agricultural wastewater recharging area may be repurposed for human use.

Aviva Prager | Quantifying Energy

Each day, Americans take for granted the extraordinary amount of energy they consume. Few have any idea where that power comes from and how much work is embodied in something as simple as turning on a light bulb.

Grayson Carlile | Looking Beyond Imperfection

As a changing climate and rapid development alter our world, we not only face the challenge of fighting for protection of the places we love but also continuing to love them despite the often devastating alterations to which they are subjected.

Claire Meints | Zooming Out to Climate Change

My podcast examines conflicting interests between the endangered California condor and the world's largest wind farm as a representation of the larger environmental question of what scale of action is necessary to address climate change.

session 3
2 p.m.-3:15 p.m.

Along Racial Lines
Olin Hall 130
Kelly West, moderator
Mari Cannon, coach

Erik Anderson | Maxville as a Place of Intercultural Interactions, 2 p.m.

Built in 1923, the Bowman-Hicks Lumber Company town of Maxville, Oregon was officially segregated between black and white loggers. The 400 residents of Maxville, in the brief time of the mill's operation, lived in separate neighborhoods, attended two schools, and played on different baseball teams. However, in spite of company policy, Oregon state law and racial conventions, the residents coexisted and persevered in the face of isolation and hardship. I argue that the difficult work of logging and the remote location of the site created a new space for intercultural connections. The history of Maxville forces historians to reconsider traditional interpretations of the settling of the American West. We must recognize the multicultural waves of migration, each of which came with unique motivations and faced diverse hardships. Faculty Sponsor: Nina Lerman

Claire Baron | Closing the Education Achievement Gap: A Walla Walla Case Study Among Latino Youth, 2:15 p.m.

In spite of recent political efforts to improve school performance among the nation's most at-risk youth, academic underachievement by low-income students of color remains ever-present in today's education system. However, with impressive results, a small number of communities across the country have successfully implemented collaborations that coordinate services between public schools, local government, and nonprofit organizations. The demographic composition of Walla Walla qualifies it as a useful case study in examining a diverse community's potential to implement innovative education reform. Focusing on Walla Walla's schools, government and nonprofit services for the town's poorest Latino youth, I examine how race and ethnicity function as factors in the way that youth-serving agencies meet the needs of a community's most marginalized young people. Faculty Sponsor: Keith Farrington

Rebecca Helgeson and Jazzmyne Ross | Implications of Color-Blind Racial Ideology and Responses to Racism in Public and Private Contexts, 2:30 p.m.

At colleges, racial stereotypes are sometimes used as themes for parties (e.g., "gangsta parties"). These themes encourage students to act in ways that are racially stereotypical. Further, with the popularity of social networking sites, there are more opportunities for students to experience racial discrimination through pictures posted by classmates from these parties. We analyze one explanation for racial tension on campuses, and why students don't always respond negatively to racist content. We propose that students don't respond to racist content because of color-blind ideology (the belief that race shouldn't be acknowledged). We hypothesize that this causes individuals to refrain from speaking about racism because of concerns about acknowledging race. In our presentation, we examine responses to racist parties in public and private to determine if individuals higher in color-blind ideology respond less negatively to parties than individuals who score lower on color-blind ideology. Faculty Sponsor: Erin Pahlke

Kenna Little, Lian Caspi and Kelly West | Children's Color Blindness and Latino Acceptance: School and Parental Influences, 2:45 p.m.

In an increasingly diverse world, there is a political and social push toward color blindness, i.e., the belief that race should not be acknowledged. In our study, we examine the influence of dual-language Spanish immersion programs

and parental messages on children's endorsement of color-blind ideologies and attitudes toward Latinos. We predict that children enrolled in immersion programs will be less likely to use color-blind strategies and be more culturally accepting of Latinos. Ten 11-year-old children and their parents completed surveys about Latino acceptance and diversity. Additionally, children played a game similar to "Guess Who." Studying Latino acceptance is especially relevant in Walla Walla, where Latinos make up a large part of the community and where immersion schools are becoming increasingly popular. Traditionally, studies of color blindness have focused on interactions between whites and African Americans. Our study is the first to look at color blindness in white and Latino interactions. Faculty Sponsor: Erin Pahlke

Religious Rites

Olin Hall 157

Benjamin Menzies, moderator

Olivia Kipper, coach

Erika Horwege | Sinners or Saints? Women and Religion in Ancient Greece and Medieval Europe, 2 p.m.

In many ancient societies, domestic seclusion was the ideal for women. I explore the effects religion had on this ideal and argue that, in both ancient Greece and medieval Europe, religion offered women avenues of power and access to the public sphere. In ancient Greece, religious traditions and rites allowed women to leave the confines of the home in a socially sanctioned manner. All women did so as mourners, and nobles gained more power serving as priestesses and *arrephoroi* (weavers). Religious roles often intertwined with political ones; other roles reinforced traditional women's work while still placing women outside of the home. Religion also offered empowerment to women in medieval Europe. The lives of many female saints show the ability for women to impact the Church. Female writers like Hildegard of Bingen and Hrotsvit of Gandersheim produced literature and theological discourse, interacting with men on an intellectual level. Faculty Sponsor: John Cotts

Sabrina Wise | Storied Searches: Tales of the People Israel, 2:15 p.m.

My presentation explores the role of the story in religious practice, as illuminated by two tales from the Jewish mystical tradition: Elie Wiesel's "Night" and Nahman Bratslav's nineteenth-century Hasidic folktale "The Loss of the Princess." As these texts grapple with the nature and purpose of Jewish practice, they suggest the core practice to be a solitary one: the framing of questions to God. I argue that the storytelling process mediates the solitary and communal, making personal religious experiences integral and even central to the shared faith of the people Israel. Bratslav's questioning culminates in unity at the divine/cosmic level, while Wiesel's yields no change in the divine. This divergence points to a larger difference between the Judaism of parables and Wiesel's Judaism as it plays out in the practical world. For Wiesel, the culmination of religious practice is human storytelling itself — and, by extension, reconnection with the Jewish community. Faculty Sponsor: Courtney Fitzsimmons

Caroline Carr | The Purity Movement: Father-Daughter Purity Balls, 2:30 p.m.

My presentation focuses on father-daughter purity balls within the evangelical Christian purity movement. I define and describe the purity ball and its creation, and explore participant involvement and evangelical rhetoric about the event. By drawing on previous research that emphasizes gender implications and sexual consequences of purity balls, I add additional insight from firsthand accounts of the purity ball experience and opinions of those within the purity movement but outside the purity ball trend. Furthermore, I touch on the imbalance between boys and girls within this phenomenon by describing the male equivalent to the purity ball: celebrations of manhood. My presentation sheds light on a significant contemporary phenomenon within the purity movement, which has received much media attention, nationally and internationally. Faculty Sponsor: Melissa Wilcox

Benjamin Menzies | A Prophetic People: the Community of Christ in Transition, 2:45 p.m.

When Joseph Smith, founder of the Latter Day Saints movement, was murdered in 1842, his church faced a crisis in

leadership. While the most famous LDS group, the Utah-based Church of Christ (subsequently named the Church of Jesus Christ of Latter Day Saints), arose out of the large group that followed Brigham Young, Smith's own son formed the Reorganized Church of Jesus Christ of Latter Day Saints in opposition to Young's leadership. With a direct descendent of Smith in charge, the church defined itself as the one church true to Smith's vision. Over the last few decades, however, the church has struggled to adapt to the changing spiritual landscape. My presentation will explore how the church, recently renamed the Community of Christ, has innovated its theology to redefine its mission through controversial initiatives, such as the ordination of women, while attempting to remain true to its "Reorganite" heritage. Faculty Sponsor: Rogers Miles

Changing Landscapes

Gaiser 159

Hannah Palkowitz, moderator

Tory Davidson, coach

Annette Patton | Environmental Controls on Bioavailable Manganese Concentrations in Soils of the Boulder Creek Watershed, 2 p.m.

Manganese (Mn) is a common element in soils that is necessary for biological processes in both plants and animals. At high concentrations, however, Mn can become toxic; high Mn can inhibit the growth of plants and may lead to negative health effects in humans. Elevated Mn concentrations in stream drainages impacted by the 2010 Fourmile Fire in the Boulder Creek Watershed, Colorado indicate that wildfire may have a significant impact on Mn cycling in natural systems. By measuring extractable manganese concentrations of soils sampled throughout the Boulder Creek Watershed, I sought to identify the influence of several factors on the bioavailability of Mn in these soils, including wildfire, and topographic variables such as elevation, slope, and aspect. This research was funded by the Keck Geology Consortium and the National Science Foundation. Faculty Sponsor: Nicholas Bader

Emma Oschrin | Bluebunch Wheatgrass Success on North- and South-Facing Slopes, 2:15 p.m.

Bluebunch wheatgrass used to dominate interior Northwest ecosystems but is now rare. This grass is more successful on sites with slightly higher moisture, yet the mechanisms behind this remain uncertain. I seek to identify demographic patterns in bluebunch wheatgrass that may help determine where and why it succeeds. I compared distribution of plant sizes and reproductive output in bluebunch wheatgrass between sites where it is rare and where it is common at the Wallula Gap Biological Station. Additionally, I experimentally increased soil moisture on dry sites to determine if this would increase seedling germination and survival and discovered that seedlings were more successful in wetter plots. I found that the rarity of plants on drier sites is not due to decreased size or reproductive output. This suggests that another mechanism, perhaps seedling success, contributes to differential plant success. A Howard Hughes Medical Institute grant to Whitman College funded this study. Faculty Sponsor: Timothy Parker

Abbye Neel | Excessive Sediment Entrainment in the Catskill Mountains of New York State Due to High Magnitude Flood Events, 2:30 p.m.

The Ashokan Reservoir watershed in the Catskill Mountains supplies New York City with over 40% of its water. Due to an increase in the frequency of high magnitude floods, turbidity from sediment entrainment poses a threat to the unfiltered water supply. Stream erosion into the glaciated mountains is the dominant process that leads to excessive turbidity. Warner Creek, a 12.5 km-long tributary in the Ashokan watershed, is a documented source of suspended sediment. Between 2010 and 2012 fluvial geomorphic features were mapped along the stream to evaluate the channel's response to several high magnitude flow events that occurred during the study period. Measurements indicate that Warner Creek is in disequilibrium. Headcut formation into underlying glacial deposits and subsequent migration is destabilizing the stream, increasing bank erosion, as well as sediment and debris load. Unless hydrology stabilizes, Warner Creek will continue to deliver turbid water to New York City's water supply. Faculty Sponsor: Nicholas Bader

Isabella Lowery | Causes and Consequences of Environmental Degradation Along the Noolturesh River in Kenya, 2:45 p.m.

The Noolturesh River is located in a semiarid landscape in southern Kenya where scarce water resources have recently come under additional pressure from population growth, growing settlement areas and subsequent increases in irrigated agriculture. My research focuses on describing the state of the river ecosystem including water quality, vegetation cover, soil conditions and how local communities cause and are affected by environmental degradation. For example, irrigation contributes to overuse of water and the runoff of soil, pesticides and fertilizers which pollute the river and contribute to bank erosion and a decrease in natural vegetation along the stream. A comprehensive understanding of the current state of the river ecosystem is crucial to preventing further degradation and to finding solutions to problems regarding water use in rural Kenya. Faculty Sponsor: Delbert Hutchison

Hannah Palkowitz | The People's Participation, 3 p.m.

In Thailand, as in much of the world, the practice of mining can be extremely controversial. Resource extraction holds many negative environmental effects as well as overwhelming economic benefits. The pursuit of these economic benefits often puts the mining industry in conflict with the public and with governments tasked with regulating the mining licensing process. Public participation is the means to ensure that the people's interests are voiced in order to limit the monopoly of power corporations would otherwise hold. My presentation examines the corrupt and controversial nature of public participation and the mining licensing process in Thailand and compares it with the Canadian licensing process. Through this comparison, I conclude that public participation is not enough to ensure that people's voices are heard. Faculty Sponsor: Jesse Abrams

Brain Matters

Science 100, Brattain Auditorium

Calvin Atkins, moderator

Zoe Randol, coach

William Stark | The Use of Polymeric Matrices as a Vector for Application of Neuromelanin to Cell Lines, 2 p.m.

Melanin in the brain is a little-understood but important component of the dopamine pathway, which is key to healthy neurochemistry. A greater understanding of this substance and its actions could reveal new avenues to combat, among others, Parkinson's disease. To achieve this understanding, melanin in neurons must be examined first in laboratory conditions. To allow the cellular uptake of melanin, a 3-dimensional matrix is spun from polymer and melanin to serve as a plating medium for the cell as well as provide the melanin for uptake. An optimal matrix should provide nanoscale roughness to overcome cellular immune response and consistent melanin distribution throughout. This matrix could provide valuable insight into how melanin functions in neurons, and lead to eventual drug and therapy treatments designed to help cases where neuromelanin is a relevant factor. Faculty Sponsor: Ginger Withers

Alejandro Fuentes Mena and Kayla Sua | Does Nicotine Moderate the Caffeine-Reinforced Conditioned Flavor Preference in Rats?, 2:15 p.m.

Nicotine and caffeine are among the most commonly used psychoactive drugs. They are often consumed together, and both have been shown to function as reinforcers. In addition, research suggests nicotine also can serve as a reinforcer enhancer for behaviors maintained by other reinforcers. In my study, rats will receive over the period of 20 consecutive days either nicotine or saline injection prior to flavor-conditioning sessions that involve exposure to a flavored solution with caffeine on half the days and a different flavored solution without caffeine on the others. After conditioning, a test session involving access to both flavored solutions will be conducted. We expect that the flavor paired with caffeine will be consumed at higher rates due to caffeine's reinforcing effects, and that this effect will be more pronounced for rats trained with pre-session nicotine to the extent that nicotine functions as a reinforcer enhancer. Faculty Sponsor: Sherry Serdikoff

Navkiran Aujla | Encoding the Value of Actions in Addiction: Analysis of the Neural Activity During Decision-Making, 2:30 p.m.

Addiction may be characterized as the pathological shift from goal-directed drug-seeking to habitual behavior. The basal ganglia is a brain region that establishes associations between decisions and outcomes which become the basis of habit formation, and is an area of interest in addiction studies. This experiment examines two subregions of the basal ganglia, the dorsolateral and dorsomedial striata, which are involved in mediating habitual and goal-directed behaviors. Long-Evans rats were trained in a choice-reward task and neural data of the decision-making process was recorded. Half of the subjects received lesions in the orbitofrontal cortex (OFC), a region in the brain also involved in decision-making, to mimic the OFC damage often found in substance-addicted individuals and examine its contribution to maladaptive behaviors in decision-making. Research was conducted at the National Institute on Drug Abuse, in the Schoenbaum Lab of the Cellular Neurobiology Branch. Faculty Sponsor: Christopher Wallace

Haley McLeod and Calvin Atkins | Insulin Signaling in the Ketogenic Diet: a Potential Mechanism of Seizure Prevention, 2:45 p.m.

The ketogenic diet (KD) induces a metabolic state of ketosis through adherence to a strict 4:1 ratio of fat to carbohydrate and protein. The diet successfully treats patients with intractable epilepsy. Although many studies have been conducted on KD, its mechanism of efficacy remains unknown. Insulin is a hormone involved in glucose metabolism and has a role in brain regions associated with seizure generation. With KD administration, insulin secretion is minimized, thus it seems likely that KD modifies neural insulin pathways. In this study we used immunohistochemistry to label the insulin receptor in brains of rats fed either control or KD chow. Our preliminary findings indicate downregulation of the IR in neural circuits within the entorhinal cortex and hippocampus of KD rats. These expressional changes with KD treatment may explain KD efficacy. This research was made possible in part by an HHMI grant. Faculty Sponsor: Leena Knight

Mental Health

Science 151

Robyn Metcalfe, moderator

Satinder Haer, coach

Jedediah Jacobson and Leland Matthaeus | Athletic Proficiency and Executive Function, 2 p.m.

We examine the relationship between the type and level of sports that people play and their executive functioning (a cognitive system that controls and manages other cognitive processes). We evaluated EF by administering a battery of validated tests of mental processing speed, decision-making, problem-solving and inhibition. Participants (N ≈ 80; all Whitman College students) were categorized by sport type (self-paced or externally paced; see Singer, 2000) and level (expert, non-expert, or non-athlete). We hypothesized that athletes would outperform non-athletes on these tasks because we believe that EF skills gained in athletic training may transfer to a laboratory setting. We further hypothesized that self-paced athletes would exhibit superior inhibition, whereas externally paced athletes would excel in other EF tasks because of the type of mental skills utilized in the training of these different sport types. We report findings regarding these differences. Faculty Sponsor: Pavel Blagov

My Xuan Vo and Johanna Otica | Mental Health Service Barriers in Walla Walla, 2:15 p.m.

The provision of mental health services in communities has long been an issue, as mental health programs struggle to be both clinically and fiscally efficient. In our study we assisted a local community organization, United Way of Walla Walla, in gathering information to help evaluate the mental health service needs of the community. We conducted our study in the rural setting of Walla Walla to enable researchers to evaluate current scientific models from the area of community psychology. These models concern both the availability of mental health services and also barriers to access and utilization of available services. We hypothesized that after-school outreach programs for adolescents and emerging adults suffering from mental illness would be the most beneficial service for the community and tested this by surveying mental health professionals and service consumers in Walla Walla. Faculty Sponsor: Pavel Blagov

Laine Atcheson | Juvenile Delinquency and Structured Activity Time, 2:30 p.m.

Adolescents are most likely to commit crimes and engage in other antisocial behavior in the hours immediately after school, from 3 p.m. to 7 p.m. As many parents assume that nighttime is when their adolescents are most likely to engage in antisocial behavior, adolescents are often left to their own devices after school. Structured and supervised activity time has been shown to significantly decrease this behavior, while unstructured and unsupervised time increases them. By surveying adolescents involved with Walla Walla's Juvenile Justice Center, I examine what adolescents who commit crimes are doing in their time after school and how that may influence their criminal activity. I also examine how such factors as sex, age and socioeconomic status can influence criminal activity and extracurricular activities. Finally, I make suggestions for improving our juvenile crime rate. Faculty Sponsor: Pavel Blagov

Robyn Metcalfe | Does Personality Predict the Outcome of Trauma-Focused Therapy in Children?, 2:45 p.m.

Since psychotherapy was introduced, clinicians have theorized that personality variables may influence the process and outcome of treatment for acute forms of psychopathology. Although the importance of personality factors to the etiology, course and symptomology of post-traumatic stress disorder has been established, their relationship to treatment outcomes has received little attention by researchers. On the basis of the five-factor model of personality and a review of the literature on PTSD in children, I hypothesized that desirable treatment outcomes would correlate positively with agreeableness and negatively with neuroticism. In a community-based correlational treatment-outcome study, I followed the treatments of a cohort of children who were receiving trauma-focused cognitive-behavioral psychotherapy for PTSD precipitated by child sexual abuse. This research may contribute knowledge about the links between

personality traits and psychotherapy outcomes in children receiving treatment for sexual trauma. Faculty Sponsor: Pavel Blagov

Immigrant/Migrant Issues

Maxey 104

Rachel Alexander, moderator

Shanglung Wang, coach

Madelyn Peterson | Representations of Race, Struggle and Immigrant Identity in "Darkroom: a memoir in black and white," 2 p.m.

The graphic novel is a unique literary medium that can generate rich exchanges between textual and visual narratives. In my presentation, I explore Lila Quintero Weaver's first graphic novel, "Darkroom: a memoir in black and white." In "Darkroom," Weaver constructs a personal narrative of childhood and adolescence as an Argentinean-American in the deeply segregated town of Marion, Ala., during the 1960s and 1970s. Weaver tells a unique coming-of-age story, that of a young immigrant in the midst of radical social change in parallel with a narrative of the civil rights movement from a child's perspective. I ask: How does Weaver negotiate her racial and immigrant identity within the civil rights struggle of the South? How does she utilize the graphic novel format to represent racial conflict and identity? This project was funded through the Adam Dublin Award for Global Multiculturalism. Faculty Sponsor: Janis Breckenridge

Alexander Brott | Unequal Alliances: Internal Power Dynamics in Cross-Racial and Cross-Movement Coalitions, 2:15 p.m.

Over the past several years a diverse, California-based coalition has worked to ban the highly toxic fumigant Methyl Iodide (MeI), ultimately leading to a nationwide prohibition of the chemical. Using the anti-MeI campaign as a case study, I explore how inner-coalition power dynamics (de)emphasize the importance of Latinos' and farm-workers' concerns relative to those of environmental and food activists, and whether participating in a racialized campaign affects the broader strategies and concerns of the various groups involved. I hypothesize that this campaign began in the context of a long history of farm-labor activism but was in various ways co-opted or exploited by mainstream, generally white groups. More optimistically, crossing racial lines prompted majority actors to more seriously consider their racial positioning and nuance their approach to future alliances. Faculty Sponsor: Aaron Bobrow-Strain

Spencer May | Farmworker Morbidity and Mortality in Eastern Washington State, 2:30 p.m.

Immigrant farmworkers have been an integral part of Eastern Washington communities for decades. Their health and wellbeing are essential for the health of our communities. But for many farmworkers, health care access is unavailable or limited by a lack of insurance, health providers, discrimination and social marginalization, making it difficult to assess their health status and burden of disease. A lack of basic information about farmworker health complicates the decision-making of state and local officials, physicians, and other advocates dedicated to improving farmworker health. In partnership with the Migrant Clinicians Network and the Pacific Northwest University of Health Sciences, I used community-based research techniques to design a farmworker public health study which could provide the necessary data to inform policies to improve farmworker health. Our survey research was designed to assess the serious injuries, diseases and causes of death among farmworkers and their families. Faculty Sponsor: James Russo

Rachel Alexander | Environmental Discourses on the U.S.-Mexico Border, 2:45 p.m.

My presentation will examine linkages between environmentalists and migrant aid groups in the Sonoran Desert of southern Arizona. The environmental movement in the U.S. is rooted in an ideal of "pristine" nature, untouched by humans -- a vision which has often been used to justify the exclusion of non-white "others" from wild spaces. While this ideal suggests that migrants are seen as unwelcome in the deserts of southern Arizona, many self-identified environmentalists have chosen to help with humanitarian aid along the border. Based on interviews with migrant aid volunteers who consider themselves to be environmentalists, my research argues that a new conception of nature

which considers historical and social human influences is being formed by activists in the Sonoran Desert. Faculty Sponsor: Aaron Bobrow-Strain

Culture Clubs and Critiques

Kimball Theatre

Hari Raghavan, moderator

Yonah Biers-Ariel, coach

Nathan Wong | Youth in Action: A Comparison of America's Hippies and China's Red Guard, 2 p.m.

In 1966, two large social movements, comprising mainly high school- to college-aged men and women, emerged in two very different countries. America saw the rise of young people determined to live a life in direct contradiction to society they deemed controlled by material consumption, while China's youth initiated the Red Guard in response to the continuing debates over economic and political policies. Hippies and the Red Guard may seem miles apart in terms of viewing an ideal state of society, but historical analysis shows remarkable similarities between them. Hippies and the Red Guard both wanted to change society in the United States and China, respectively. Neither could be described as merely an example of youth's rebellion against authority; each group firmly believed in its chance to create a more equal society. While their ideologies differed, the sense of community and freedom felt by hippies and Red Guard members is apparent. Faculty Sponsor: Brian Dott

Adam Brayton | Virtual Reality, Nature and the Imagination, 2:15 p.m.

The term "virtual reality" is not simply the talk of "World of Warcraft" and "Call of Duty." Virtual reality has been with the human species since prehistoric times. Cave paintings, storytelling and myth-making may be our earliest examples of virtual reality, but the most fundamental example in nature is the phenomenon of play. The evolution of our technology and culture away from the natural and physical world has drastically changed the very nature of how our imaginations interact with both games and stories. Video games shift our imaginations even further from the world around us, but at what cost to our physical selves? Faculty Sponsor: Donald Snow

Paige Joki | Scars That Shape Us: An Analysis of The Joker's Incongruent and Imperfect Madness, 2:30 p.m.

I contend that The Joker's queering of his gender performance in "Batman: The Dark Knight" provides a lens into what is perceived as madness and allows him to remake and deploy this label. I draw upon works by Munoz and Huffer to lay the groundwork of my analysis of The Joker's violation of established gender norms and use of an oppositional discourse that lambasts the moral fiber of Gotham City. I examine The Joker as a character and his role in "The Dark Knight," the ways in which he is able to represent his madness through the violation of gender conformity, and how this is perceived by the people of Gotham City. I analyze how The Joker uses different explanations to describe the origin of his infamous scar, and I elucidate the importance of the bank robbery and hospital scenes to The Joker's deployment and reclamation of his madness. Faculty Sponsor: James Hanson

Hari Raghavan | The Choice to Be Ruthless and the Choice to Be Different: Coming of Age in "Whip It!", 2:45 p.m.

On its face, the 2009 film "Whip It!" seems to tell a rather familiar story, as it centers upon a teenage outcast (played by Ellen Page) in want of direction who hails from a small Texas town and finds the sense of purpose she seeks in the world of sport. In its details, however, this movie is as far from ordinary as any can be. Notably, it features a woman as its protagonist, while most coming-of-age films attend to men. More impressive still, it tethers itself to a pursuit with no true equivalent for men (the sport of roller derby). It is a work unlike most others of its genre and in my presentation, I draw upon the motifs and themes of past coming-of-age films to show how "Whip It!" upends narrative conventions, producing a more dynamic, more inclusive portrait of adolescence in this new era. Faculty Sponsor: Robert Sickels

Global Politics and Economics

Reid G02

Suzanne Jaszczult, moderator

Andy Larson, coach

Shelly Le | The Isolated Variable: An Analysis of Factors Affecting the Nutritional Status of Sikkimese Women, 2 p.m.

Approximately one in three people in the world suffer from malnutrition. Women and children of low economic status in developing countries are more prone to even lower nutrition rates. This condition is especially pronounced in India, where gender inequality and cultural norms contribute to unequal levels of nutrition between genders. My presentation examines how cultural and political behavior affects women's nutrition in India. Seeking to isolate a series of possible variables that affect nutrition in India, my study focuses on the Indian state of Sikkim, which has the lowest reported women's malnutrition in India. Through a series of individual interviews with Sikkimese women and government officials, my study finds that a number of cultural standards intersect to affect Sikkimese women's eating habits, their access to food and how effective government nutrition-aimed programs are focused on women's nutrition. My research was conducted during a semester abroad in northern India. Faculty Sponsor: Michelle Janning

Leah Siegel | Arab Spring, Moroccan Frustration, 2:15 p.m.

On Feb. 20, 2010, in the midst of the international Arab Spring, hundreds of thousands of Moroccans took to the streets of cities and towns across their country. This movement, started by a group of young Moroccans who utilized both Facebook and YouTube to spread their message, was organized as a call for reform and transparency in the monarchy. King Mohamed VI was quick to respond in the form of promising a new constitution and holding parliamentary elections. I spent time in the fall of 2012 talking with leaders of the movement, who reflected on what happened: their sources of pride, their frustrations, and what they foresee of Moroccan politics in the future. Faculty Sponsor: Keith Farrington

Sebastian Jay | Informal but Not Illegal: the Effects of Mexico's Informal Sector on Working and Living Conditions, 2:30 p.m.

In Mexico, the economic liberalization and anti-inflation policies of the past two decades have largely achieved their goals: substantial increases in exports and foreign direct investment, stabilized inflation and rapid manufacturing sector growth through the increasing presence of multinational corporations. However, the liberalization of Mexico's economy has failed to improve, and in some cases has made worse, conditions for Mexican workers by failing to address the continued existence of a large informal sector. Mexicans work 9.9 hours per day on average, more than laborers in all other OECD countries. Meanwhile, 49.5 percent of Mexican workers received no benefits in 2003, and their median wages have declined while their productivity has increased. The quasi-legal status of the Mexican informal sector enables and perpetuates a significant disparity in working and living conditions among Mexicans. Faculty Sponsor: Denise Hazlett

Suzanne Jaszczult | Politics of Biotechnology in Cuban Agriculture, 2:45 p.m.

After the fall of the Socialist bloc in the early 1990s, Cuba was cut off from Soviet imports of fuel and pesticides that made Cuba's industrial agriculture system viable. Seeking a homegrown solution to the food shortage, Cuban farmers reverted to basic, organic farming methods. Tractors requiring oil and spare parts were set aside in favor of oxen. In the years since this shift, Cuban farmers have also developed more modern farming techniques, including the use of biotechnology. Throughout the rest of the world, biotechnology is controlled by multinational chemical companies such as Monsanto. The results have been largely detrimental to farmers and to the environment. In Cuba, however, a more environmentally friendly, perhaps even socialist, form of biotechnology has emerged at the national level. My presentation explores biotechnology in Cuba as a case study of the sustainable potential of technology in agriculture. Faculty Sponsor: Shampa Biswas

session 4

3:45 p.m.-5 p.m.

Gender and Sexuality

Olin Hall 130

Spencer Wharton, moderator

Satinder Haer, coach

Elizabeth Daviess | Consent and the Kantian Problem With Sex, 3:45 p.m.

In "The Metaphysics of Morals" Immanuel Kant condemns sexual activity as necessarily immoral in that it violates his concept of categorical imperative. Kant thinks sex is wrong because it requires that a person treat her partner as if she is not a person. Solutions to the Kantian problem with sex are numerous and varied, consent being the most common and contemporary. However, consent, as we think of it, does not solve Kant's problem. This is because sex by its very nature involves the use of a partner's body and therefore, according to Kant, the denial of her status as a person. To Kant's mind, no one can consent to this kind of use. In my presentation I propose an alternative solution to the Kantian problem of sex. This involves a kind of sexual desire that can only be fulfilled in the presence of consent. Faculty Sponsor: Rebecca Hanrahan

Jenna Fritz | In the Age of "Modern Family": the Impact of Sexual Orientation on Young People's Conceptualization of Family Formation, 4 p.m.

My research addresses how heteronormative conceptions of having children and becoming a parent affect individuals of different sexual orientation. The concept of heteronormativity, or the way that heterosexual norms and regulations become normalized and position non-heterosexuality as abnormal, appears in much of the research on the queer community. Heteronormativity appears in previous research about the decision-making process and paths to parenting taken by homosexual couples yet largely ignores younger people who are not seriously thinking about having children. The research also excludes a comparative look at how these thought processes vary based on sexual orientation. To explore these issues further, my research focuses on qualitative interviews with college-aged respondents of different sexual orientations. Amidst changing social norms and expectations regarding sexual identity and parenthood, the voices of young people today provide insight on approaches to combat social and political inequality based on sexual orientation. Faculty Sponsor: Helen Kim

Carly Johnson | Gender as Undeserving: Constructions of Deservingness in the 2007 ENDA Debates, 4:15 p.m.

Congress has introduced in every session since 1994 the Employment Non-Discrimination Act to protect lesbians, gays and bisexuals from employment discrimination. In 2007, Congress included gender identity protections to ENDA for the first time in legislative history. Yet the inclusion resulted in the bill's death in committee. A revised ENDA reverted to protecting exclusively sexual orientation, but it, too, failed. Since 2007, ENDA has remained inclusive, but the legislation still has not passed. Very little academic writing examines why this temporary exclusion occurred, let alone exploring the role social constructions of deservingness played in the expendability of "trans folk." My research attempts to answer questions of trans-exclusion by examining the arguments deployed by politicians and politically powerful organizations during the 2007 ENDA debates. Through this rhetorical analysis, I argue that inclusionary politics failed in 2007 because trans folk were constructed as undeserving of employment protection. Faculty Sponsor: Melissa Wilcox

Morgan Caverhill and Vy Cao-Nguyen | Judged at First Sight: the Effects of Stereotype Inconsistency on Interracial Dating Evaluations, 4:30 p.m.

In the course of intimate partner selection, how does one's perception of stereotype inconsistent behavior motivate the selection of one race over another? Members of a negatively stereotyped race can be evaluated positively if they are inconsistent with their group's negative stereotype, but in some cases they risk negative backlash when they deviate from stereotypical expectations (Cialdini & Trost, 1998). Our study used fictional, male dating profiles of minority races to analyze women's evaluations of stereotypically inconsistent romantic prospects compared to stereotypically consistent romantic prospects. The results were compared to the evaluations of white romantic prospects featuring the same content in the profiles as with minority races. Further research in this area may offer better understanding of factors that influence women's willingness to date interracially and provide clues about why interracial dating remains uncommon despite rising diversity in the United States. Faculty Sponsor: Brooke Vick

Spencer Wharton | School, Spirituality and Social Circles: Sources of Sexual Attitudes on Campus, 4:45 p.m.

Where do attitudes about sex and sexuality come from for students on a college campus? How are they reinforced? Drawing on Foucault's model of the Panopticon, as well as the work of sociologists such as Robert Merton and Peter Berger, I propose that for your typical Whitman or Walla Walla University student, three powerful forces generate norms and influence attitudes: religion, social networks and the school's policies. My presentation elaborates on this theoretical perspective and draws on data collected in my thesis research to show how this actually informs and influences students at two very different schools: Whitman and Walla Walla University. Faculty Sponsor: Keith Farrington

Philosophies and Theologies

Olin Hall 157

Michael Putnam, moderator

Elana Simon, coach

Sandra Matsevilo | An Examination of the Relationship Between Happiness and Self-Sufficiency in Plato, Aristotle and Seneca, 3:45 p.m.

In Aristotle's view, happiness is "activity expressing virtue." In outlining his two categories of virtue, the virtue of action and the virtue of understanding, Aristotle allows fortune the ability to effect this sense of happiness in a human being, the consequence of which is that we are unable to fully control our own morality. In my presentation, I examine whether or not this is truly the case by incorporating the arguments of Plato and Seneca, who advocate for a self-sufficient happiness which is, conversely, not dependent on external influence. I also investigate the mortality of the soul and the way in which it has the potential to determine the possibility of true self-sufficiency for the human being. Faculty Sponsor: Julia Ireland

Shannon Kelly | Mind and Body, 4 p.m.

In her letters to Descartes, Princess Elizabeth of Bohemia asks a question that many modern philosophers have tried to answer: "Given that the soul of a human being is only a thinking substance, how can it affect the bodily spirits, in order to bring about voluntary action?" Here Elizabeth questions the very nature of the relationship between mind and body. It is not easily understood or explained how a nonphysical substance can affect or be affected by a physical substance in order to create both sensations and voluntary movement. Through the attempts to find solutions to this problem, it becomes clear that the true problem lies in Descartes' separation of the nonphysical mind and the physical body within the idea of a person. Drawing from Spinoza, Locke and Hobbes, I argue that mind and body are simply two ways of understanding a single, indivisible human being. Faculty Sponsor: Patrick Frierson

Merrett Krahn | The Aesthetics of Maria Montessori's Philosophy of Education, 4:15 p.m.

In her writings, Maria Montessori reflects on the nature of beauty, viewing her methods as enabling children in her

classrooms to interact with beauty. Montessori's methods "multiply the sensations, and develop the capacity of appreciated fine differences in stimuli and . . . refine the sensibility . . . Beauty lies in harmony, not in contrast . . . harmony is refinement; therefore, there must be a fineness to the senses if we are to appreciate harmony." (Montessori, 169) Montessori's philosophy of education develops two contributions to aesthetics. She sees beauty as generative; interactions with beauty are so filled with wonder that the experience calls for a physical response that produces more beauty. Montessori also views beauty as fundamentally holistic. For the Montessori child, experiences of beauty are not a separate category from daily experience. Instead, the two phenomenological realms of the Montessori child are one and the same. Faculty Sponsor: Patrick Frierson

Wyatt Thomas | Hannah Arendt and the Political Possibilities of Non-Participation, 4:30 p.m.

In her book, "Responsibility and Judgment," Hannah Arendt reveals how the refusal to participate in politics may secure political power under totalitarian rule insofar as it withholds consent from and avoids implication in the atrocities associated with the totalitarian scheme. The consummation of this project for Arendt necessitates the participation of followers and thus is weakened by non-participation. The paradox of the claim that leaving the political sphere for a private world holds political power is that power for Arendt is contained in a plurality of humans, not in a single person. Thus, it seems impossible that the retreat from the presence of others into a private state can yield political power. In examining Arendt's notion of action as containing an interdependent relationship between leader and follower and her idea of power as that which arises between individuals acting together, we can understand how non-participation under totalitarianism reveals political possibilities. Faculty Sponsor: Julia Ireland

Michael Putnam | How to Have Queer Catholic Dissent: Thoughts on the Theology of Mark Jordan, 4:45 p.m.

Since the 1970s, a new discourse on human sexuality has begun to shape the theological landscape of Catholic sexual ethics. The causes of the so-called sexual revolution in the United States and Europe are well known: widespread availability of contraceptives, changing gender roles and changing attitudes about the etiology and permissibility of same-sex desires and relationships, among others. All of these issues have given rise to new articulations of official doctrine from the Catholic magisterium as well as new articulations of dissent. The latter issue – that of same-sex intimacy – has proved to be one of the most divisive in Catholic moral thought. My presentation explores the dissenting hermeneutic of Mark Jordan, a contemporary theologian and critic. I explore the ways that Jordan's work attempts a queer reading of the Catholic Church, and how this, in turn, lays the foundation for queer Catholic dissent. Faculty Sponsor: Courtney Fitzsimmons

Politics of Place

Gaiser 159

Heather Domonoske, moderator

Alexandra Norman, coach

Andrew Strong | Geographies Reperceived, 3:45 p.m.

Building on research conducted through Beta-local, a nonprofit arts organization based in San Juan, Puerto Rico, I address the ways in which capital and power produce particular aesthetics, relations to place and forms of representation within the specific context of the country. These layers shape the ways in which the landscape is perceived and navigated. Focusing on artists, geographers and scientists, I examine the critical approaches to landscape that explore these relations and reflect a particular form of artistic practice. These socially engaged art practices contextualize the land within a new framework for understanding the social, cultural and political aspects of place. My research was funded by the Outdoor Environmental Leadership Fund and the Whitman Environmental Studies Department. Faculty Sponsor: Nicole Pietrantoni

Helen Angell | Exclusion in India's Capital: Evicting and Resettling Delhi's Slum Residents, 4 p.m.

In April 2004, more than 150,000 of New Delhi's slum residents were evicted from their homes along the banks of

the Yamuna River and forced to relocate outside the city. This is a not a unique story in India's capital, where those who live in slums are repeatedly and systematically denied the right to the city. My research, completed during a semester abroad in India, seeks to understand how one of Delhi's resettled communities now relates with the government in light of new policies that claim to be inclusive of slum residents. Ultimately, my research reveals the complicated and deep-rooted nature of injustice in the treatment of Delhi's slum residents, and that their path to equality and dignity lies in more than a few policy changes. Faculty Sponsor: Phil Brick

Zoey Rogers | Power of Connection: Sustainable Lifestyles and Sense of Place, 4:15 p.m.

My presentation focuses on what motivates residents of Melbourne, Australia, to live an environmentally sustainable lifestyle, with a specific investigation of the role of "sense of place." I conducted 19 in-depth interviews with residents engaged in three types of sustainability activism: personal (e.g., energy savings); group (e.g., community gardens); and political (e.g., lobbying and organizing for structural change). Although participants did report experiencing a "sense of place" in Melbourne, it was their broader feelings of connection with nature and the planet as a whole, their awareness of the human-made and cultural/political environment, and their personal health, relationships and community not necessarily connected to a geographical location within Melbourne that motivated them to take action. This study is co-authored by Elizabeth Bragg and will be published in the spring issue of EcoPsychology. Faculty Sponsor: Amy Molitor

Heather Domonoske | Translation of Risk: A Case Study on Climate Change in Bhutan, 4:30 p.m.

Bhutan, located in the Himalayan Mountains, is a developing nation known for its commitment to environmental stewardship. The Bhutanese are experiencing increased rainfall, decreasing snowfall, heavier monsoon seasons and more floods — all symptoms of climate change resulting from activities in countries beyond their borders. My presentation looks at how citizens of non-Western countries struggle to translate their experiences with climate change to a world dominated by Western concepts of science, society, environment and risk. Focusing on the community level at which translation, representation and recognition occur, my presentation taps the research I conducted in Bhutanese villages in 2012 with the School For Field Studies. I analyze the ways in which the citizens of Bhutan attempt to negotiate their relationship to a changing environment and how these negotiations are translated and represented by non-Bhutanese actors. Faculty Sponsor: Jesse Abrams

Poverty and Childhood Development

Science 100, Brattain Auditorium

Lillian Bailey, moderator

Maura Barstead, coach

Catherine Sturtevant | Empowering the Pushers: Exploring Midwife Participation in Washington's Natural Birth Movement, 3:45 p.m.

If experience leads to expertise, then women are clearly the pregnancy experts. However, in the United States (unlike many of its developed-world peers), the majority of births are guided by medical technology rather than by maternal instincts. Over the past 50 years, dissatisfaction with this trend has led to the natural birth movement, which is associated with a resurgence of midwife-attended births. Even though natural birth has modernized its practice and hopes to appeal to a wide range of women, the percentage of midwife-attended births on a national scale remains low. My presentation focuses on research I am conducting among women in Walla Walla in order to explore the mother's autonomy in childbirth and our culture's current perceptions of midwives and natural birth. Faculty Sponsor: Jason Pribilsky

Sarah Stanger and Helen Jenne | The Role of Socioeconomic Status in Problem-Solving Development Across the First Year, 4 p.m.

Cognitive problem-solving is the ability to evaluate possible responses to a situation and choose the most effective

response. The development of cognitive problem-solving begins in infancy and can be measured through tool-use tasks. We investigate differences in the development of problem-solving between 6-8- and 10-12-month-old infants of high and low socioeconomic status (SES). In our study, infants attempted to retrieve an out-of-reach toy using a tool. Preliminary data indicates that high SES infants improve in tool-use ability between age groups while low SES infants do not. This suggests a divergence in problem-solving skills between high and low SES infants by 12 months of age, adding to a well-known range of deficits in cognitive skills experienced by low-SES infants. Faculty Sponsor: Melissa Clearfield

Rachel Shober, Al-Rahim Merali and Ariel Carter-Rodriguez | The Effects of Socioeconomic Status on Infant and Maternal Stress, 4:15 p.m.

Children growing up in low-SES environments are more sensitive to the effects of poverty-related stress. Measuring salivary cortisol is one efficient way to quantify stress in humans, especially in low-SES environments. One purpose of our study is to investigate when SES-based differences in cortisol output begin. A second goal is to examine whether infant cortisol levels are correlated with maternal cortisol levels and the maternal perception of chaos in the home. To test this, we are collecting saliva samples from 6- to 12-month-old infants and their mothers three times over the course of one day, while also administering a household chaos assessment. So far, while there are no SES differences in maternal cortisol or perceptions of stress, we did find marginally significant SES differences in infant cortisol, with low-SES infants sharing higher levels of cortisol throughout the day. Faculty Sponsor: Melissa Clearfield

Nick Tacke and Lillian Bailey | The Effects of Socioeconomic Status on Selective Exploration, 4:30 p.m.

Infants change their behaviors in accordance with the objects they are exploring. They also tailor their exploratory actions to physical context. This selectivity of exploratory actions represents a foundational cognitive skill that underlies higher-level cognitive processes. Our study compared the developmental trajectory of selective exploratory behaviors in typically developing and low socioeconomic status infants. We conducted a cross-sectional study of infants' selective exploration of objects and surfaces at ages 6-8 months and 10-12 months by presenting the infants with hard and spongy cubes on a tray that was half-solid and half-spongy. So far, low-SES infants are showing less selectivity in their rubbing on different surfaces compared to high-SES infants. This pattern would suggest a developmental delay in low-SES infants' detection of affordances, which could have implications for later cognition. Faculty Sponsor: Melissa Clearfield

Literary Drifts

Maxey 104

Katherine Haaheim, moderator

Richael Best, coach

Eli Zavatsky | Hamlet and Heisenberg, 3:45 p.m.

In 1998, Michael Frayn wrote "Copenhagen," a play that explores the infamous 1941 meeting of Niels Bohr and Werner Heisenberg. Frayn uses Bohr and Heisenberg's encounter to ask if a physicist has the moral right to research the practical (and destructive) exploitation of atomic energy. Within this overarching question, Frayn alludes to Shakespeare's "Hamlet." The first allusion is to Elsinore, Hamlet's castle. The second allusion is to silence and its association with death in both plays. By including these allusions, Frayn leads his audience and readers to compare "Hamlet" to "Copenhagen." Frayn enables a better understanding of Heisenberg's internal conflict by suggesting a comparison to the internal conflict of Hamlet; the prince's investigation may lead to regicide, while Heisenberg's research may give the Nazis the atom bomb. Hamlet and Heisenberg share many of the same motivations and disincentives, and the execution of their goal would have similarly massive implications. Faculty Sponsor: Donald Snow

Kathy Nguyen | "Siete Times Seven": Translation of a Story "*Mixteado,*" 4 p.m.

Translation is more than simply changing the words from one language to another, especially in a text like "Seven Veces Siete." In translating the short story by Francisco Piña from Spanish to English, I confront the challenges of staying true to the meaning and the effect of the original text while also contemplating the Chicano identity conflict and "code-switching," two prominent themes in the story. Code-switching is a phenomenon in which a speaker or writer uses at least two languages in the same context, as the two Chicano characters discuss and employ in the story. I present my translation, "Siete Times Seven," and the challenges I faced, aiming to give insight to English-speaking readers to familiarize themselves with the Chicano conflict and the ingenious approach that Chicanos use to express themselves. Faculty Sponsor: Nohemy Solorzano-Thompson

Gabriella Friedman | Conceptualizing Authorship in Colson Whitehead's "The Intuitionist," 4:15 p.m.

The figure of the writer has appeared in literature for centuries but takes on a new significance in what some would call a "post-racial" society. In his 1999 novel "The Intuitionist," Colson Whitehead addresses issues of authorship within the context of an allegory about social mobility and racial uplift. The novel asks us to reflect on a number of questions: What is the relationship between the author, the text, and the reader? In what ways does writing reinforce oppressive social structures, and in what ways does it allow us to transcend them? What responsibilities do authors take on in penning their texts, and what do these texts demand of their readers? In examining these questions, I situate Whitehead's novel in a broader discussion about how contemporary African American writers conceptualize authorship and respond to trends in literary theory that call for the "death" of the author. Faculty Sponsor: Christopher Leise

Katherine Haaheim | Drifting Thoughts: a Discussion of Guerilla Art and Unconventional Publication, 4:30 p.m.

Last summer, with the help of a fundraising platform called Kickstarter, I dropped my poetry onto Minneapolis from the baskets of handmade balloons. The reactions and correspondence I received have helped shape the way I conceive of my own poetics, and have radically reshaped my view about the possibilities of publishing. We live in a world where many aspiring artists recognize that their ability to sustain themselves financially from art is nearly impossible, and the work of getting a novel or a collection of poems published is akin to playing a lottery game. My presentation focuses primarily on the ways that the post-Internet world has rallied behind art and provided more accessible means of distribution than existed previously. Caution: This presentation may include flying poems! Faculty Sponsor: Robert Elliott

Great Performances

Kimball Theatre

Erik Feldman, moderator

Mari Cannon, coach

Diana Wu | Tonality, Melody, and Poetry in the Songs of John Duke, 3:45 p.m.

John Duke was an American composer active from the 1920s to the 1980s. He is best known for his 200-plus art songs, many of which remain extremely popular. Throughout his career, Duke opposed the avant-garde compositional practices fashionable in the mid-20th century, preferring to write in a largely tonal idiom. However, his use of tonal harmonies is often unconventional, marked by a distinct independence from the strict rules of harmony and counterpoint. My presentation explores the ways in which Duke makes use of unusual chord progressions and melodic lines to express emotional and poetic content in his song cycle "Six Poems by Emily Dickinson." It will include both visual and sung demonstrations. Faculty Sponsor: John Earnest

Ethan Maier | Pieces of Washington, 4 p.m.

My performance comprises three character pieces that I composed to honor the three most important places in Washington state for me and my development as a person. The suite is scored for an unusual combination of instruments: upright bass and bassoon, instruments chosen because of their wide registers and beautiful timbres. These magnificent instruments weave around each other in three distinctly different compositions that portray Lake Chelan, Oysterville and Yakima. Faculty Sponsor: John Earnest

Aaron Stern | Three Women as Inspiration for Music, 4:15 p.m.

My introductory project for MUS-480 was a three-piece character suite of thematically consistent musical portraits of personal interest to me. I chose to write music for three important women in my life: my mother Nancy, my friend Madeline, and my girlfriend Claire. Each of these powerful women inspire me with their intelligence, nurturing, romance, contradictions and intuition. The totality of any human cannot be musically captured, but I focused on certain aspects of their respective characters that might give a glimpse into our relationship. The result is three different representations of feminine musical energy that I voiced as an attempt to understand my connection to these women. The suite is scored for flute and electric guitar and lasts about 12 minutes. Faculty Sponsor: John Earnest

Erik Feldman | Light on Water: Writing and Performing "Moonrise," 4:30 p.m.

My presentation is a performance of an original choral work, "Moonrise." Composed in the fall of 2012, the piece attempts to capture, through music and lyrics, the experience of seeing the moon rise over the ocean. The piece is intended to convey a mood; to that end, it employs harmony and rhythm carefully, allowing them to take precedence over melody (though not doing away with melody). I will present a performance of the piece by the Whitman Chamber Singers (Jeremy Mims, director) then discusses its inspirations, my compositional process, and the rehearsal process. Faculty Sponsor: John Earnest

Creative Process

Reid G02

Elizabeth Hambleton, moderator

Madeleine Hale, coach

Carrie Cecil | The Writing Is on the Wall: Confronting the Politics of Graffiti in New York City Through Preservation, 3:45 p.m.

A ubiquitous part of the urban landscape since the late 1960s, graffiti is both symbolic of, and derived from, the urban culture of New York City. What began as a few kids writing their names on walls and subways across the city is now a transnational art movement that transcends the boundaries of the city's five boroughs. In my presentation, I consider the possibility of, and problems associated with, the preservation of graffiti as a cultural artifact in New York City. I center my exploration on the potential for government-sponsored historic preservation at 5 Pointz in Long Island City, N.Y. Considered by many to be the "mecca of graffiti," 5 Pointz is one of the oldest and largest collections of graffiti in the United States. Faculty Sponsor: Jason Pribilsky

Olivia Kipper | Bodies of Work: Exploring Colonization in Museum Spaces, 4 p.m.

My presentation explores the relationship between the museum and the bodies within it, in both literal and critical contexts. The growing field of new museology challenges dominant views of museums and history, seeking to politicize the museum space and reorient curators and viewers. My presentation will call on James Clifford's and Jeffrey Feldman's research on "contact zones," which they understand as colonization surrounding material objects and encounters within museums. I will investigate the contact zone as it affects the human (and critical) body in museums,

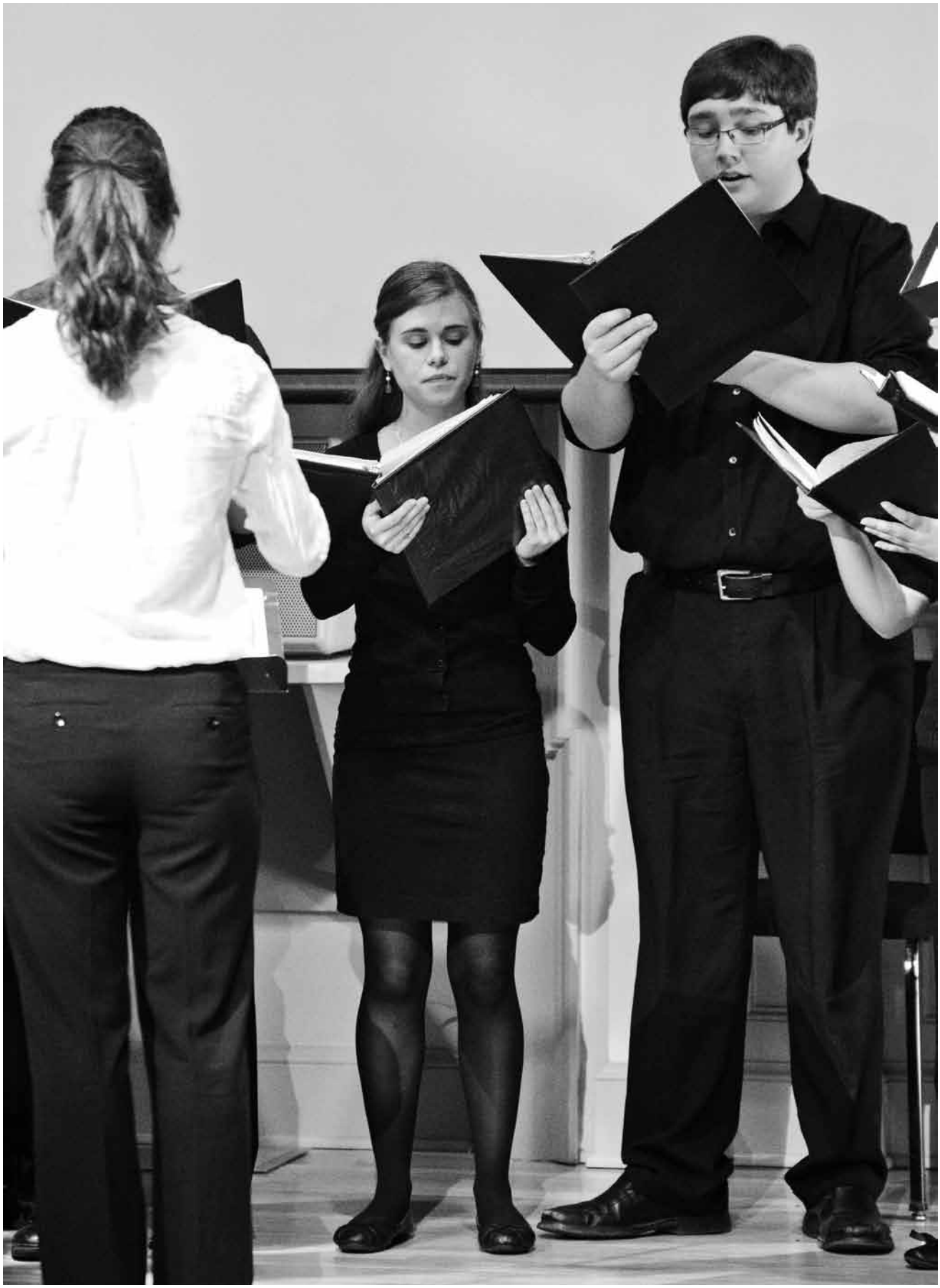
providing analysis of art and historical museums that both feature the body and find its presence conspicuously lacking. Building on these examples, I will explore Marina Abramovic's "The Artist is Present" as a successful introduction of the physical body into the museum through her own participation. Ultimately, through active reinstatement of the body, the museum can be decolonized. Faculty Sponsor: Michelle Acuff

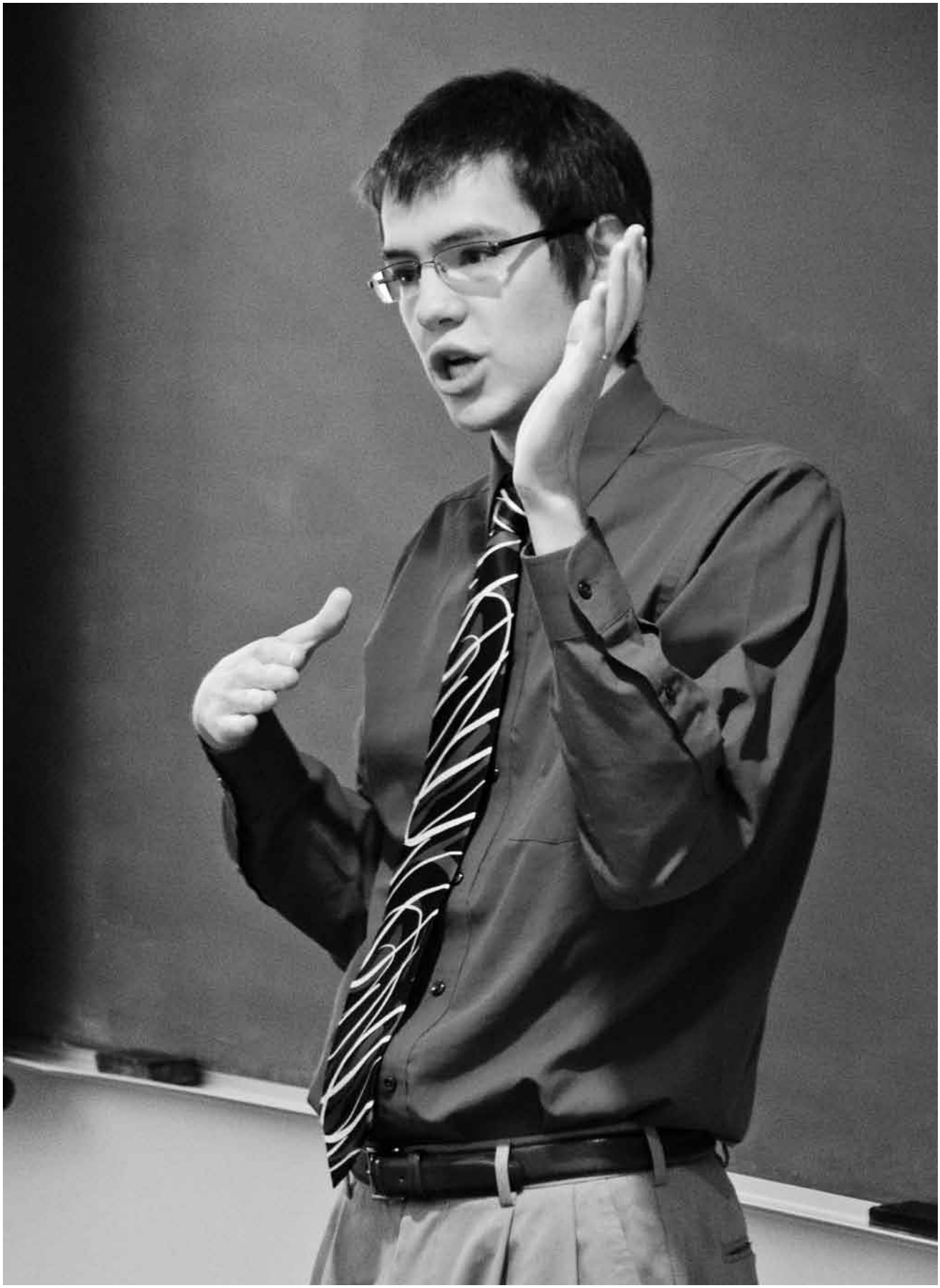
Clare Spatola-Knoll | The Time to Play: The Artist Ruth Fluno in Walla Walla, 1952-1974, 4:15 p.m.

Students at Whitman College think they are unfamiliar with the artist Ruth Fluno, until I mention a piece of hers that hangs in the stairway of Maxey Hall. Impossible to miss (or forget), this huge and peculiar rug was made by Fluno, an artist whose career was based almost entirely in the Walla Walla (Whitman) community. With a gift from David Troxel, Whitman Class of 1978, I was hired by the Sheehan Gallery for "The Ruth Fluno Student/Faculty Research Project & Retrospective Exhibition." Undertaking the first in-depth research on the artist in years, I am contributing to the rich history of Walla Walla as Fluno's work sheds light on the city's role in the development of Northwest art as well as the role of women in both art and society during her time. Faculty Sponsor: Kynde Kiefel

Elizabeth Hambleton | Not a Sonata, 4:30 p.m.

Claude Debussy (1862-1918) is widely considered the first composer to usher in the Impressionist/Symbolist musical era. Impressionism in music uses extended tertian harmony to simultaneously suggest and obscure harmony, and employs ties and syncopation and hemiolas to obscure the sense of downbeat in order to emulate the Impressionist painting style. Debussy uses these techniques and more to craft a style that sounds beautiful and seems simple. But that style is more complex than first meets the ear. His late style consists of a surprising blend of old and new techniques. His *Sonate pour flûte, alto, et harp* (1915) is the third piece in a set of cyclical sonatas, a brilliant new form he developed too late to completely realize before he died. I will present aspects of my detailed analysis of the piece, focusing on motivic quilting and cyclical traits. Faculty Sponsor: Susan Pickett





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Special thanks to Donna Jones, Summer Singer, Amber Woodworth, Amy Dodds, Doug Scarborough, Bon Appétit, Whitman College Technology Services and the student coaches and student musicians who contributed their time and talents.

WHITMAN COLLEGE

ON THE COVER:
(Left to right) Erik Feldman ’14, music theory; Nicholas Chow ’13, geology; and Carrie Cecil ’13, anthropology

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