

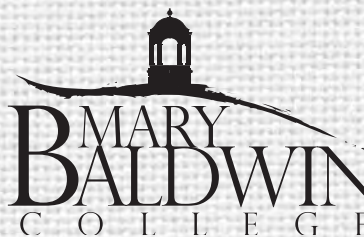
CAPSTONE FESTIVAL



THE SHOWCASE OF UNDERGRADUATE RESEARCH,
SCHOLARSHIP, AND CREATIVE ACTIVITY AT MARY BALDWIN COLLEGE

SENIOR PROJECTS ● HONORS PROJECTS ● SPECIAL PROJECTS

MAY 10
2012



PARTICIPANTS IN THE CAPSTONE FESTIVAL HAVE BEEN NOMINATED BY THE FACULTY BASED
ON THE HIGH QUALITY AND ORIGINALITY OF THEIR WORK AND HAVE ACCEPTED NOMINATION.

CAPSTONE FESTIVAL

In the early days of Mary Baldwin Seminary, a Capstone Festival of sorts existed.

“All final examinations were held in public and members of the board of trustees and the townspeople attended to view students parse sentences, do intricate math problems, and recite soliloquies,” writes Professor Emerita of History Patricia H. Menk in her book *To Live in Time; The Sesquicentennial History of Mary Baldwin College 1842–1992*.

By the late 1800s, the practice of public recitations had disappeared. In 2006, Mary Baldwin College inaugurated a new Capstone Festival.

At each year’s festival, a select group of students, nominated by faculty, present their senior, honors, and special undergraduate research projects to the MBC community and the general public. The high quality and breadth of research, scholarship, and creative activities on display is a testament to the legacy of those earlier years and a celebration of our future.

The Festival is sponsored by the Advisory Board of Visitors, the Office of Sponsored Programs and Undergraduate Research, the Global Honors Scholars Program, and the Committee on Research, Scholarship, and Creative Activity.

FESTIVAL PARTICIPANTS

SARAH BAILEY

Project Advisor: James Gilman

Academic Advisors: James Gilman and Mary Hill Cole

Type of Project: Senior Project

Presentation Category: Delivered paper

Title: Choice or Chosen: The Early Controversy Over Free Will and Predestination in the Theologies of Pelagius, Augustine, and John Cassian

Abstract: At the turn of the fifth century, controversy erupted over the place of God's grace and will versus the place of human free will in Christian salvation. This controversy was the beginning of the continuing controversy between free will and predestination. The main opponents were Augustine of Hippo and British monk Pelagius. During their conflict, both grew more extreme and polarized in their views of the salvation of humankind. Augustine supported a completely damaged and evil human will, necessitating his belief that God is the sole initiator and actor in choosing or predestining who will have salvation. Contrastingly, Pelagius accepted that the God-given, human free will has the equal ability to choose good and evil, meaning that people can do good works of their own choosing to gain righteousness and the rewards of salvation. They created an unbalanced perspective on salvation that the Council of Orange (529CE) and fifth-century theologian and monk John Cassian tried to balance. Cassian, by accepting the working wills of God and humans in initiating and continuing salvation of Christians, equalized the staunchly opposed ideas of Pelagius and Augustine.

Biography: Sarah Bailey is a double major in History and Religion. She was raised in Elkton, Virginia. Throughout her time at MBC, she has been a member of the MBC/MWL Band and is currently Band Sergeant. Upon graduation she wishes to gain experience in the workforce, as well as work in her community and church.



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SARAH ANNE BARROW

Project and Academic Advisor: Martha Walker

Type of Project: Honors Thesis

Presentation Category: Delivered paper

Title: More French Than Feminist: An Analysis of Ni Putes Ni Soumises' and Les Blédardes' Response to L'affaire du Foulard

Abstract: L'affaire du foulard (the scarf affair) is widely understood as France's apparent attack on Muslims. The affair began in 1989 with the expulsion of three middle-schoolers who refused to remove their veils in class and culminated with national bans on the veil in schools and public spaces in 2004



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and 2010, respectively. Ni Putes Ni Soumises and Les Blédardes, two French feminist groups, responded to L'affaire du foulard in a manner representative of 21st century French feminism: placing French ideals ahead of feminist principles. In their public responses to the affair, both groups focused on the threat of the veil to the French Republic, rather than focusing on the effect the ban might have on (Muslim) women.

Biography: Sarah Anne Barrow is a double major in women's studies and political science with a minor in music. She is from Lynchburg, Virginia, and will be remaining in Staunton next year to work with RISE United Methodist Faith Community before attending Divinity School.

ANASTASIA BLAKE

Project and Academic Advisor: Peter Ruiz-Haas

Type of Project: Senior Project

Presentation Category: Poster

Title: Effect of Runoff and Seasonal Change on Concentrations of Endocrine-Disrupting Compounds (EDCs) in Rural and Urban Areas

Abstract: The goal of this project was to assess the concentrations of endocrine-disrupting compounds in local streams. Endocrine-disrupting compounds are natural or synthetic compounds that interfere with normal endocrine function in the body. Variations in seasonal and temporal EDC contamination in tributaries of the Shenandoah River in Virginia were measured over a period of two years; samples were collected from rivers and wastewater treatment plants (WWTPs) to evaluate the contribution of rural and urban activities. After extraction, we determined estrogenic activity in samples with the Yeast Estrogen Screen (YES). In streams, EDC concentrations (EEQ) ranged from non-detectable to 18 ng/L, with a mean of 3.6 ng/L. We observed the highest amounts following rainfall events, particularly in streams impacted by agricultural activity. EDC levels rise about 150% after heavy rainfall, due to runoff. In WWTP effluents, the EDC levels ranged from non-detectable to 3.22 ng/L. Future research will include analysis of samples using high pressure liquid chromatography (HPLC) coupled with an enzyme linked immunosorbent assay (ELISA) to more accurately assess hormones in water samples.

Biography: Anastasia Blake is a chemistry major with an emphasis in environmental chemistry. Her hometown is Auburn, Alabama. In the future, she hopes to either attend medical school or pursue a Ph. D. in chemistry.



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KATERINI CARPENTER

Project and Academic Advisors: Mary Hill Cole and Amy Tillerson

Type of Project: Senior Project

Presentation Category: Delivered paper

Title: Starvation, Death, Disease and Survival: Women During the Siege of Leningrad 1941-1945

Abstract: In 1941, the world was at war. Hitler was continuing his campaign of domination across Europe. One of his attempts of dominance was his march into the Soviet Union. The German army laid siege on three vital Soviet cities; one of these cities was Leningrad. During this time of turmoil, the citizens of Leningrad, primarily the women, were left alone to defend their city and endure the hardships that came with being abandoned by their government. Despite many adversities and demanding circumstances, the women of Leningrad took control of their own destiny by setting up defenses, keeping the city businesses and services operational, and resolving to do anything necessary to keep the people of Leningrad alive. While World War II was a dark period in history, the roles that the women of Leningrad adopted during the 900-Day Siege will be remembered as a period of great strength during much tribulation.

Biography: Katerini Carpenter is a history major. She is originally from Los Angeles, California, but now resides in Edinburg, Virginia. After graduation, Katerini plans on taking a year off, after which she will pursue a graduate degree in history.



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SARAH COKER

Project and Academic Advisor: Paul Callo

Type of Project: Senior Project

Presentation Category: Poster

Title: Transmission of Plasmodium and Haemoproteus within Hooded Warbler Nests

Abstract: Avian malaria affects 68% of bird species world-wide by decreasing reproductive and nestling success. Many species have evolved with this protozoan parasite and have developed resistance to its deadly effects. However, isolated species, such as those found in Hawaii, face the prospect of extinction. In order to better understand how to protect these threatened birds, is it necessary to understand the mode of transmission of this parasite. Polymerase chain reaction (PCR) assay combined with DNA sequencing can contribute to our understanding of the transmission of malaria in the breeding ground surrounding the nesting site by specifically testing if the featherless, immobile nestlings are infected, and if so, whether or not the parasite is the same lineage found in the parents.

Biography: Sarah Coker is a biology major with a minor in chemistry from Midlothian, Virginia. She plans on



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continuing research in ornithology.

CAROLANN DODSON

Project Advisor: Maria Craig

Academic Advisor: Karl Zachary

Type of Project: Senior Project

Presentation Category: Poster

Title: Investigation of the Thermodynamics of DNA Interactions with the LL-37 Peptide

Abstract: Recent studies report that LL-37, an antimicrobial peptide of innate immunity, is over-expressed in breast and prostate cancer tumors and is involved in the autoimmune response in lupus models. This peptide is able to bind to DNA and diffuse through the cell membrane, allowing entry of self-DNA that may upregulate the immune system through Toll-like receptor 9 (TLR9). To further understand the biochemical nature of the DNA/LL-37 complex, we have used electrophoretic mobility shift assays (EMSAs) and isothermal titration calorimetry (ITC) to determine thermodynamic parameters of complex formation between LL-37 and CpG DNA sequences known to activate TLR9. EMSA results demonstrate increased complex size and DNA binding as LL-37 concentrations increase. Quantitative analysis of these results show a decrease in ethidium bromide staining when the concentration of LL-37 is above that needed to shift all DNA, suggesting additional deposition of LL-37 on the DNA. ITC results show evidence of two-site binding of DNA to the peptide, with a 20:1 DNA to peptide ratio. These sites have association equilibrium constants, K_a , on the orders of 10^9 and 10^8 M^{-1} for the first and second site, respectively, providing evidence of an extremely strong interaction between the LL-37 peptide and CpG DNA. Enthalpies for binding at both sites were negative with magnitudes on the order of 10^4 kcal per mole of DNA, indicative of an exothermic reaction. Future directions include studies of small molecules capable of blocking the binding of the peptide to the DNA.

Biography: Beth Dodson is a chemistry major with a biochemistry emphasis and a minor in mathematics. Her hometown is Mechanicsville, Maryland. In the fall, she intends to enter the Ph.D. program in organic chemistry at the Virginia Polytechnical Institute in Blacksburg.



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MICHELLE L. FILLIATER

Project Advisor: Joseph Sprangel

Academic Advisor: Janet Ewing

Type of Project: Senior Project

Presentation Category: Presentation with multi-media support

Title: Camp Metamorphosis: A Business Plan

Abstract: This research was conducted to investigate a solution to the problem of troubled teens, a rising issue in the United States today. Parents and society as a whole are trying to find the best way to keep these teens from ending up in a juvenile hall. Therapeutic wilderness camps and boot camps have become key factors in the

rehabilitation of these teens. This business plan is a hybrid of these two forms of camps and proposed to be located in Capron, West Virginia. The focus of the camp is on teens aged twelve to seventeen.

Biography: Michelle Filliater is a business major with a double minor in marketing and leadership studies. Her hometown is Smithfield, Virginia. Upon graduation she will commission into the United States Army Chemical Corp as a 2nd Lieutenant.



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ALLISON GORDON

Project and Academic Advisor: Abigail Wightman

Type of Project: Senior Project

Presentation Category: Delivered paper

Title: Literacy and Language in Oral Tradition Cultures

Abstract: Indigenous cultures around the world have been influenced by the effects of colonialism and foreign powers. Among the most potent of these effects has been the introduction of writing and literacy to cultures which had previously relied on oral tradition. The literacy programs of Western governments and Christian missionaries have influenced these oral tradition cultures to both use literacy to their advantage politically and socially and to be diminished by claims of inauthenticity. This paper focuses on three groups, the Kuna of San Blas, Panama, the Cherokee Nation of North America, and the Aboriginal people of Australia, and their interactions with language, writing, and literacy.

Biography: Alli Gordon is an anthropology/sociology major from Hampstead, Maryland. After graduation she plans to attend graduate school for library science.



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ANGELA GUPTA

Project and Academic Advisor: Paul Deeble

Type of Project: Senior Project

Presentation Category: Poster

Title: Effects of CpG/LL-37 Complexes on Prostate Cancer Cell Migration

Abstract: One in six US men will be diagnosed with prostate cancer in his lifetime (ACS, 2011). One approach to fighting this disease involves stimulation of the immune system to promote tumor regression. CpG DNA sequences, bacterial sequences that activate immune cells, have been shown to promote these anti-tumor immune responses and to be better tolerated than traditional chemotherapy drugs. However, the effects of CpG alone are weak. LL-37, a small DNA-binding protein, increases the immune response to CpG, and thus we have evaluated a combination of CpG and LL-37 as a cancer therapy. Despite strong contextual support, previous



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findings on the effectiveness of LL-37/CpG treatments have been variable. Promising results have been found in ovarian cancer in vivo. Chuang, et al. (2009) found that treatment with LL-37 enhanced the anti-tumor effects of CpG. However, other studies found that CpG DNA alone stimulates proliferation and invasion in RWPE-1 cells (Kundu et al. 2007). Weber et al. (2008) also found that LL-37 alone induces metastasis formation in breast cancer cell lines. In this project, I investigated the effects of CpG/LL-37 treatments on cell migration in a prostate cancer progression model using cell scratch assays. I hypothesized that the addition of CpG would increase cell migration and the addition of LL-37 would amplify these effects.

Biography: Angela Gupta is a biology major with a double minor in chemistry and music. Her hometown is Lynchburg, Virginia. After graduation, she will be entering the M.D./Ph.D. program at Virginia Commonwealth University.

AUTUMN HARPER

Project and Academic Advisor: Mary Hill Cole and Amy Tillerson

Type of Project: Senior Project

Presentation Category: Delivered paper

Title: Out for Blood: Murder and Mystery During the Saint Bartholomew's Day Massacre

Abstract: In 1572, during the French Wars of Religion, a man acting on behalf of another shot Admiral Gaspard de Coligny II in an attempted assassination. This act led King Charles IX to order the deaths of every Huguenot in the country, believing this would prevent an uprising. Thousands of Huguenots were murdered on August 24, the feast day of St. Bartholomew. This chain of events would not have begun had it not been for the hatred of an unknown person towards the Admiral. While many believe that Catherine de'Medici, mother of Charles IX, ordered the death of the Admiral, the author concludes that the powerful Guise family of France did so as a means of avenging a family member who died at the hands of Coligny.

Biography: Autumn Harper is a history major from Norfolk, Virginia. After graduating, she plans on doing museum or archival work while continuing her education.



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JESSICA LEE HARTZOG

Project Advisor: Joseph Sprangel

Academic Advisor: Claire Kent

Type of Project: Senior Project

Presentation Category: Presentation with multi-media support

Title: Tyson Foods, Inc.: A Sustainable Evaluation

Abstract: This research project was conducted to complete a sustainable evaluation of the company Tyson Foods, Inc. The objective was to develop a plan to improve upon their 493 ranking on *Newsweek's Top 500 Global Green Companies*. The research begins with a current sustainable evaluation focusing on the triple bottom line



Participants in the 2011 Capstone Festival.

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elements: people, planet, and profit. Following the current sustainable evaluation a desired future sustainable state was introduced. An implementation plan was then defined to close the gap between these two states to improve upon the sustainable initiatives at Tyson Foods, Inc. The final action was the development of a time line and associated costs to implement these sustainability initiatives.



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Biography: Jessica Hartzog is from Dudley, North Carolina and is majoring in business for a sustainable future with minors in leadership studies, sociology, and management, and will earn a Certificate of Entrepreneurship. Jessica is a member of Sigma Beta Delta, Alpha Kappa Delta, and a recipient of the Gordon Hammock Award. She is also a cadet in the Virginia Women's Institute for Leadership.

SARA HODGES

Project and Academic Advisor: Mary Hill Cole and Amy Tillerson

Type of Project: Senior Project

Presentation Category: Delivered paper

Title: Destruction and Expulsion: The Marquês de Pombal, the Jesuit Order, and the Lisbon Earthquake of 1755

Abstract: In 1755, a magnitude 8.7 earthquake hit Lisbon, leveling three-quarters of the city and killing thousands of its inhabitants. In the aftermath of this natural disaster, Sebastiao Carvalho e Melo (later known as the Marques de

Pombal), rose to power by directing the reconstruction of the city. From this position of power, Pombal launched a campaign to modernize Lisbon, to the dismay of the Jesuit Order in Portugal. Through a series of careful political and legal maneuvers, Pombal was able to expel the Order from Portugal and its colonies. By looking at primary accounts of the earthquake as well as secondary sources about the state of eighteenth century Portugal, it can be shown that this great disaster started a change of events that ultimately led to the forced removal of one of Portugal's most influential institutions.



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Biography: Sara Hodges is a history major with a double minor in art history and political science. She is a resident of Huntsville, Alabama, and a participant in the George C. Marshall Undergraduate Scholar Program. She hopes to attend graduate school in the future.

ANAYA JONES

Project Advisors: B. Richard Plant and Sarah Kennedy

Academic Advisor: Katherine Turner

Type of Project: Senior Project

Presentation Category: Delivered paper

Title: Exploring the relationship between Humbert Humbert, Popular Media and the Reader in Nabokov's *Lolita*
Abstract: Vladimir Nabokov's novel *Lolita* is narrated by an artfully manipulative, self-confessed pedophile who attempts to convince his readers, often successfully, that it

was Lolita who seduced him. The novel's risqué topic made it popular among scholarly critics as well as an outraged, and often titillated, public. Many readers feared that Nabokov supported his narrator's illicit passions. Taken from a larger discussion on the many layers of manipulation within the novel, this paper explores the ways in which Humbert Humbert's rhetoric is similar to the advertisements and media he criticizes. For instance, both Humbert Humbert and advertisements communicate using a specialized language with very specific aims. These similarities help readers see through the often uncomfortably convincing Humbert, and exonerate Nabokov from accusations of complicity in Humbert's crimes.

Biography: Anaya Jones is an English major with minors in creative writing and psychology. Originally from Avalon, California, Anaya plans to remain in Staunton while pursuing a graduate degree in Information Science online. She is determined to become a librarian and live in the Pacific Northwest.

ALEXANDRIA KELLY

Project and Academic Advisor: Paul Deeble

Type of Project: Senior Project

Presentation Category: Poster

Title: Photodynamic Therapy and its Effects on Neuroendocrine Differentiated LNCaP and PC3 Prostate Cancer Cell Lines.

Abstract: Prostate cancer affects one in six men in the U.S., and the American Cancer society projected that in 2011, 33,720 men will have died of the disease. Among the prostate epithelial carcinoma cells, the neuroendocrine differentiated (NED) morphology has been linked with advanced stages of prostate cancer. One recent unpublished senior thesis focused on the possibility of the NED cells exhibiting increased resistance to chemotherapeutics, finding a slight increase in cell viability of NE cells compared to surrounding cancer cells in an in vitro model (Combs 2011, unpublished data). In the current study, NED was induced in LNCaP and PC3 cells using 10uM Forskolin (FSK) and 500uM 3-isobutyl-1-methylxanthine (IBMX) for three days. The cells were then exposed to Photodynamic Therapy (PDT), which requires the use of a photosensitizing drug and a light source with wavelengths above 600nm.

Pyropheophorbide-a (PPa) is used as a known and effective photosensitizing drug in this study. An MTT assay was used to determine effective dosages for LNCaP and PC3s based on cell viability. Experiments using this treatment in vitro have shown cell death using 0.25uM PPa for LNCaP cells and a concentration of 25nM PPa for PC3 cells. Based on previous research with NED resistance to cancer therapies I would expect the NE



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differentiated cells to have an increased resistance to cell death by apoptosis induced by PDT.

Biography: Alexandria Kelly is a biology major from Williamsburg, Virginia. She is now a resident of Staunton and will be working at the Augusta/Valley Animal Hospital as a vet assistant. Over the next year Alex will be applying to veterinary colleges and Master's programs in conservation biology.

LEIGHANN KIMBLE

Project Advisor: Gordon Bowen

Academic Advisor: Abigail Wightman

Type of Project: Senior Project

Presentation Category: Delivered paper

Title: Peruvian Elections in 2011: Reemergence of Populism and the Influence of the Indigenous Majority

Abstract: Peru is a nation with a large underprivileged indigenous minority, constituting over 45% of the population. These groups, often concentrated in rural regions, have in recent decades utilized the right to protest to influence the democratic government. Despite their efforts, rural and indigenous individuals have remained disadvantaged and repressed, as demonstrated by the 2009 attack on protestors in Bagua under former president Alan García Pérez. The June 2011 run-off elections in Peru led to the victory of former Chavez sympathizer and radical politician Ollanta Humala by a mere 1.49 percentage points, holding 51.49 percent of the vote, over opposing candidate Keiko Fujimori, who held 48.51 percent of the vote. Humala's campaign strategy, in combination with rebellious events in the indigenous community preceding the elections, suggest a change in the democratic system in Peru as the substantial support leading to Humala's victory was the result of a more active indigenous voice and Humala's appealing populist approach.

Project and Academic Advisor: Abigail Wightman

Type of Project: Senior Project

Presentation Category: Delivered paper

Title: The Dirty War in Argentina: Trafficking of "Disappeared" Children in a Quest for National Identity

Abstract: During the Dirty War (1976-1983), Argentines experienced human rights violations in the form of "disappearances" at the hands of the military government. During this period, children were taken from parents who were with their children at the time of their abduction as well as from women who were pregnant at the time of their "disappearance" and later gave birth in the torture facilities. Although these children could have easily been murdered along with their parents, they were instead "adopted" by members of the regime or by the torturers themselves and socialized into the regime "culture." This paper explores why these children were saved and "adopted" to members of the regime, paying particular attention to the influence of ethnonationalism and national unity.

Project Advisor: Daniel Métraux



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Academic Advisor: Abigail Wightman

Type of Project: Senior Project

Presentation Category: Presentation with multi-media support

Title: China's "Oil Diplomacy" in Iran: A Threat to U.S. Security?

Abstract: Since China opened its doors to foreign investment and deregulated its economy in the late 1970s and early 1980s, it has become a major economic world power with sustained economic growth approaching ten percent per annum for three decades. China has achieved great power status through a "peaceful rise" diplomatic strategy. The United States has been the greatest contributor to China's rise, investing more than a trillion U.S. dollars annually in Chinese products and corporations. Through this massive trade relationship, the two nations have become undeniably interdependent. As China continues to develop, however, its oil consumption and demand has grown outrageously, causing international concern regarding the potential threat of China's "oil diplomacy." In the interests of securing oil resources, China has turned to Iran, a nation on which the UN Security Council has placed economic sanctions owing to the growth of its potentially dangerous uranium enrichment program. This paper explores the extent to which China's relationship with Iran poses a threat to U.S. interests and the importance of balancing the Sino-American relationship.

Biography: Leighann Kimble is an anthropology/sociology, international relations, and Asian Studies triple major from Baltimore, Maryland. In the fall of 2012, she will begin law school at either Cornell University, Pennsylvania State University, or the University of Maryland/Carey Law.

KRITTIKA KRISHNAN

Project and Academic Advisor: Louise Freeman

Type of Project: Honors Thesis

Presentation Category: Poster

Title: Effect of Cyclooxygenase-2 Inhibition in the Asian Musk Shrew

Abstract: Several steroids are crucial for sexual differentiation in mammals. Among them, estradiol is the main hormone necessary for the masculinization of male rats. It has been shown to operate via the upregulation of the enzyme cyclooxygenase-2 (COX-2), which further upregulates prostaglandins (PGE2). These molecules are also involved in pain sensation and inflammation. Similar to estradiol, dihydrotestosterone (DHT) is required for full sexual differentiation of males in precocial species such as primates and humans and in altricial species like shrews. The mechanism of action of DHT is unknown, although there has been molecular evidence that shows that COX-2 is upregulated by DHT. We inhibited COX-2 in 9 shrews of each sex by injecting them neonatally (1-5 days old) with an anti-inflammatory drug (indomethacin). Adult sexual behaviors were observed to note if the appropriate behaviors were displayed. Data collected from female shrews shows drug-treated females to have a lower latency to tail wag ($p=0.047$) and lower



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latency to mounts ($p=0.045$), which allowed males to mount them significantly more often ($p=0.026$). Data from treated males is in the process of collection and analysis.

Biography: Krittika Krishnan is a psychology major with minors in biology and philosophy. She currently resides in Singapore, although her hometown is Bangalore, India. In the fall, she will be entering a Ph.D. program in behavioral neuroscience either at the University of Illinois, Urbana-Champaign, or the University of Texas at Austin.

RACHAEL LAM

Project and Academic Advisor: Karl Zachary

Type of Project: Senior Project

Presentation Category: Poster

Title: An Examination of Complexes Formed between Cucurbituril and Select Metallocenes

Abstract: Cucurbit[7]uril (CB[7]) and cucurbit[8]uril (CB[8]) are two of the larger members of the cucurbit[n]uril (CB[n]) family. This family consists of CB[5], CB[6], CB[7], CB[8], and CB[10], where the number within the brackets refers to the number of glycoluril units within the ringed molecule. Host-guest complexes are currently being applied to nanotechnological advances such as drug delivery and supramolecular catalysis. Cucurbituril's specificity towards certain guests and the properties of the resulting host-guest molecules are of high interest in a variety of fields, depending on the properties of the resulting complex. The objective of the following research is to examine the intermolecular interactions between CB[n] host and guest molecules with an emphasis on electrochemical properties. Our hosts within these complexes are CB[7] and CB[8], and our guests are a range of metallocenes: bis(cyclopentadienyl)-iron(III) (ferrocenium), bis(cyclopentadienyl)-titanium(IV) dichloride, bis(cyclopentadienyl)-cobalt(III), bis(cyclopentadienyl)-vanadium, bis(cyclopentadienyl)-zirconium(IV) dichloride, bis(cyclopentadienyl)-molybdenum dichloride, and bis(cyclopentadienyl)-chromium. Such metallocenes are particularly important as Ziegler-Natta catalysts, which figure prominently in the commercial production of synthetic polymers.

Biography: Rachael Lam is a chemistry major with a minor in math. Her hometown is Elkton, Virginia. After graduation she will be looking for a full-time research position and possibly looking forward to applying to graduate school.



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RACHEL LAUX

Project Advisor: Amy Diduch

Academic Advisor: Judy Klein

Type of Project: Senior Project

Presentation Category: Poster

Title: Family Structure and the Work Force: How Family Structure Affects Women's Work Decisions

Abstract: Family structures in the United States have evolved dramatically in recent decades, departing from the traditional nuclear family. In its place are alternative



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Participants in the 2011 Capstone Festival.

households, such as single-headed households and cohabitation, in addition to the nuclear family. How do these household arrangements affect decisions about work time, leisure time, and household chores? Economic theory makes predictions about the impact of spouse's income on the labor market decisions; however, women's choices may be constrained by lack of job flexibility or lack of benefits attached to part-time employment. Using the American Time Use Survey and recent literature, this study examines changes in women's roles in the family structure and how women balance their work and leisure/family time.



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Biography: Rachel Laux is an economics and political science major with a minor in anthropology. She is from Lakeland, Florida. She has been active in the school community with curriculum development and has worked in the Staunton community. After graduating in the spring, she plans to work in marketing before embarking on graduate school.

SARAH MCFARLAND

Project and Academic Advisor: Abigail Wightman
Type of Project: Senior Project

Presentation Category:

Presentation with multi-media support

Title: How will you be Marked?: Gravestone Symbols of Staunton, Virginia

Abstract: In this research project, I detail the way in which people commemorate death through the use of symbols on gravestones.

Using theories of symbolic anthropology, I am able to highlight the constant cultural changes in Staunton, Virginia, from 1920 to the present. I analyze variables, including race, to show how the ways in which people are marked after death on tombstones correlates with the culture in which they lived.

Biography: Sarah McFarland is an anthropology/sociology major with a minor in leadership studies. She is from Hopewell, Pennsylvania. Following graduation, she will be commissioning into the United States Army as a Second Lieutenant and will report to Ft. Gordon, Georgia for training. She eventually plans to go to nursing school at the University of Pittsburgh.



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CEARRA MECHEM

Project Advisor: Joseph Sprangel
Academic Advisor: Janet Ewing

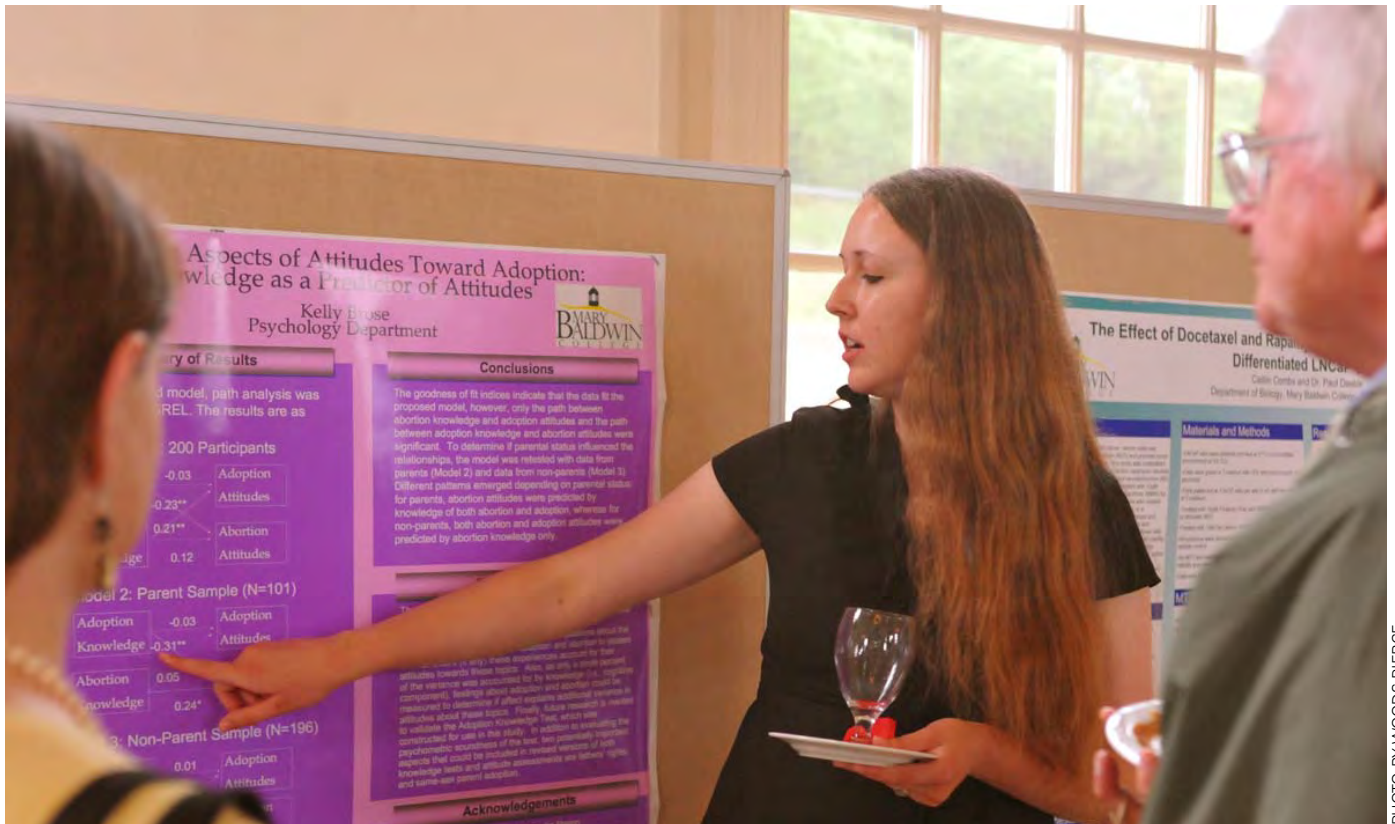


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Participants in the 2011 Capstone Festival.

Type of Project: Senior Project
Presentation Category: Presentation with multi-media support

Title: American Efficiency Services, LLC, "Guaranteed Leak Detection" Strategic Business Plan

Abstract: This research explored the development of a strategic business plan for a company considering entering a new target market. American Efficiency Services, LLC (AES) currently performs services for different power plants within the power industry. These services include condenser tube cleaning, helium leak detection, and industrial consulting and evaluation. This strategic plan investigated their strengths and weaknesses, as well as realizing the opportunities and threats that potentially await them in their current work environment. Understanding this current state of the organization was integral in developing the strategic plan of an optimal future state to include the addition of this new target market. This addition is to consist of smaller facilities, such as hospitals and colleges/universities that use boiler systems as their primary source of heat energy. The reason is that AES has the ability to provide the basic services needed is that these facilities cannot do it for themselves.

Biography: Cearra Mechem is a major in sustainable business with minors in education, sociology, and marketing. She has been very active on campus in multiple clubs and Student Government Association. Her



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hometown is Virginia Beach, Virginia, but she is planning to move to Westminster, Maryland, after graduation. She has no set plans at the moment, but hopes to be able to pursue a career in business marketing.

AMANDA COLLEEN MILLER

Project and Academic Advisor: Paul Ryan

Type of Project: Senior Project

Presentation Category: Visual or audio-visual creation

Title: Constructed Perspective

Abstract: Influenced by American pop-artist Jim Dine, for his expansive work with mixed-media and charcoal, and American abstract expressionist Al Held, for his unique use of linear perspective, Amanda created a drawing exhibition of constructed perspective. The drawings are fabricated forms of bold perspective inspired from photographs of mortise-and-tenon style construction. By combining multiple views, she creates the illusion of depth and space within each drawing, focusing on accurately rendering perspective of the structure while creating an interesting composition. Her use of charcoal and oil sticks creates a thick textured surface bringing depth and variation to each piece of artwork.

Biography: Amanda Miller is a studio art major with emphasis in drawing, painting, and ceramics. Her hometown is Staunton, Virginia. In the fall, she will continue her education at Mary Baldwin College. After graduating, Amanda plans to enter the missionary field, using her art as a tool for ministry.

JONATHAN A. MILLER

Project and Academic Advisor: Robert Allen

Type of Project: Senior Project

Presentation Category: Delivered paper

Title: The Origin of Anabaptist Hymn Tunes As Sung by the Old Order Amish and Hutterites

Abstract: The Anabaptist movement, taking its origin in the Protestant Reformation, found common ground with many of the tenets of Protestantism. However, a number of significant differences could be noted between the themes of the Protestant reformers and those of the more radical but lesser known Anabaptists. The latter, known for their Biblicism, simple faith, and love for their enemies, formed a lifestyle as well as patterns for worship that even today distinguish their descendents from mainstream Protestant believers. Under intense persecution from the church establishment, the Anabaptists began to write their own hymn texts, which detailed their experiences of suffering, explained their beliefs, and expressed their devotion to God. They sang these hymns to popular tunes of the day. This study examines the early hymnody of this Anabaptist heritage and links the music sung today by the Old Order Amish and the Hutterites, two groups descended from the Anabaptists, to many of the hymns and hymn tunes sung by their ancestors. Characteristics of the early hymns and tunes are considered, as several present-day Amish and Hutterite tunes are compared with their prototypes in 16th century Europe. Many texts and tunes are preserved because the Hutterite and Old Order Amish groups of North America adhere steadfastly to the traditions of the past.

Biography: Jonathan Miller is an adult degree student with a music major and an education minor. He lives in Stuarts Draft, Virginia, with his wife and four children, and enjoys family activities such as birding, camping, and gardening. After graduation, he hopes to find employment, preferably teaching music, in a local elementary or high school.



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STEPHANIE MOREHEAD

Project and Academic Advisor: Heather Macalister

Type of Project: Senior Project

Presentation Category: Poster Presentation

Title: Compulsive Hoarding as a Distinct Clinical Diagnosis in the DSM-V

Abstract: Traditionally, compulsive hoarding has been viewed as a symptom and subtype of obsessive-compulsive disorder and treated as such. However, there are new questions about whether compulsive hoarding might be distinct enough to be listed as a separate disorder, called "Hoarding Disorder," in the next edition of the Diagnostic and Statistical Manual, to be released in 2013. Currently, compulsive hoarding is classified as a symptom of the anxiety disorder; however there is a new push to list compulsive hoarding as an

impulse disorder in addition to its classification as a subtype of OCD. This paper analyzes relevant empirical articles to determine whether there are sufficient differences between OCD and Compulsive Hoarding for the latter to be considered a distinct disorder.

Biography: Stephanie Morehead is a psychology major from Gaithersburg, Maryland. She wishes to further her studies in psychology by attending graduate school in the near future, but first she wants to take a break from school, work full time, and pursue her current love of traveling around the world in frilly pink dresses.



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PRIYANKA NADAR

Project Advisor: Anne Allison

Academic Advisor: Eric Jones

Type of Project: Honors Thesis

Presentation Category: Poster

Title: Evaluating Estrogenic Activity of the Suspected Endocrine Disrupting Compound Triclosan and its Effects on Breast Cancer Proliferation

Abstract: Endocrine disrupting compounds (EDCs) are a disturbingly ubiquitous environmental pollutant. They have been shown to have several adverse effects on many different physiological systems, as they interfere with hormone receptors in several species of animals. One such EDC is triclosan, a commonly used antimicrobial agent. Several animal studies have shown it to induce physiological changes normally associated with estrogen. Despite this, very few studies have been done on triclosan's effect on human health, especially on its cancer risk. This is worrisome, as triclosan has been detected in the urine of approximately 75% of the population. It has also been shown to cause dose-dependent DNA damage, a hallmark of carcinogenicity. To test this, the estrogenicity of triclosan has been quantified using the yeast estrogen screen (YES). Breast cancer cell proliferation will be tested via the mitotic index, or the number of cells in mitosis in relation to the total number cells in the sample. Estrogen-receptor positive breast cancer cells are now being treated with triclosan and its environmental byproduct, methyl-triclosan, and immunofluorescence is used to visualize cells in mitosis. Preliminary results confirm that triclosan is mildly estrogenic.

Biography: Priyanka Nadar is a biology major with minors in chemistry, mathematics, and Asian Studies. Her hometown is Mechanicsburg, Pennsylvania. In the fall, she will be studying biomedical engineering at Dartmouth College.



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ELENA NGUYEN

Project and Academic Advisor: Louise Freeman

Type of Project: Honors Thesis

Presentation Category: Poster

Title: Sexual Differentiation in the Asian Musk Shrew: The Role of DNA Methylation and Dendritic Spines

Abstract: DNA methylation has recently been shown to be involved with sexual differentiation in rats and is influenced by developmental exposure to the masculinizing hormone, estradiol. In addition to having increased behavioral tendencies to mount receptive females, male rats also have high levels of spinophilin in the mPOA of their hypothalami. Our study will be the first to look at DNA methylation and dendritic spines in Asian musk shrews, a species that is masculinized by androgens rather than estrogenic hormones. For our first trial, we extracted hypothalami from male and female shrew pups and determined the amount of methylation for each gender by using a colorimetric quantification assay. We also ran a Western blot on the pups' spare brain parts to detect the presence of spinophilin. Both the DNA methylation and spinophilin assays worked in shrews, indicating that the antibodies used in both assays were compatible with shrews. As a result, our findings have successfully validated the possibility of epigenetic research in shrews as well as the potential use of some valuable tools—colorimetric DNA quantification and Western immunoblotting for spinophilin—for future research in shrews.

Biography: Elena Nguyen is a psychology major with minors in biology and creative writing. Her hometown is Reston, Virginia, but she now lives in Bristow, Virginia. She hopes to become a doctor and plans to take some time off after graduation to work, travel, and learn how to dance.



PHOTO BY WOODS PIERCE

THOMAS OAKLEY

Project Advisors: Mary Hill Cole and Amy Tillerson

Academic Advisor: Abby Arnold

Type of Project: Senior Project

Presentation Category: Multimedia Presentation

Title: Hurricane Camille in Nelson County, Virginia: The Event, Its Effects, and How They Dictated and Influenced Relief Efforts

Abstract: On the evening of August 19, 1969, a storm began to form over Nelson County, Virginia, which lasted until approximately three o'clock in the morning of the 20th. This storm was caused by a series of meteorological events, the most important of which was the remnants of Hurricane Camille. This weather phenomenon produced rainfall in excess of twenty-seven inches in a time span of approximately six hours. Flooding and debris flows created by such intense rainfall were devastating to the residents, landscape, and infrastructure of the county. The remoteness and inaccessibility of Nelson County, in conjunction with the devastation of its population and infrastructure, greatly dictated which types of aid agencies were most



PHOTO BY WOODS PIERCE

effective in providing immediate recovery, relief and rebuilding. Immediately following the disaster, the more bureaucratic the organization, the more ineffective its efforts. Organizations such as the Red Cross, the Office of Emergency Preparedness, and the Office of Civil Defense could not make decisions quickly enough to be efficient; inefficient communications left red tape uncut and created a quagmire in relief efforts. Smaller relief agencies such as the Mennonite Disaster Services and the Salvation Army were less bureaucratic, more adaptable, and thus more effective in rebuilding Nelson County. Versatility and adaptability proved to be the requirements of effective aid following the Nelson County Flood of 1969.

Biography: Thomas Oakley is a history major with a minor in middle school education. He is from Morehead, Kentucky, and now resides in Greene County, Virginia, with his wife, Melissa. Thomas plans on teaching middle school United States History in the central Virginia area after graduation.

KARI OBAUGH

Project and Academic Advisor: Steven Mosher

Type of Project: Senior Project

Presentation Category: Presentation with multi-media support

Title: Impact of Non-insurance Revenue on a Twelve-Month Operational Budget

Abstract: The research question examined in this project inquired into the impact of non-insurance revenue on a twelve-month operational budget within Federally Qualified Health Centers (FQHCs). The independent variable in this question was the Highland Medical Center's yearly revenue by category. The dependent variable was the impact of non-insurance revenue on their twelve-month operational budget. Impact of non-insurance revenue was measured. Impact is defined as a direct change or the difference created by non-insurance revenue on a center's twelve-month operational budget. Non-insurance revenue is defined as revenue that is not generated from a company or program (e.g. Medicare and Medicaid) that provides a guarantee of compensation for specific health care services in return for payment. With decreases in local funding and increases in the number of medically underserved individuals, non-insurance revenue will be critical to the future existence of Highland Medical Center. There is no doubt that money being generated through non-insurance revenue creates positive outcomes and that it has a positive effect on the health status of the individuals being served within the rural community. Without non-insurance revenue, approximately 60 percent of a center's revenue would be in limbo. When their mission includes serving the poor, FQHCs simply cannot construct an annual operational budget without using non-insurance revenue.

Biography: Kari Obaugh is a health care administration major with a minor in economics. Her hometown is McDowell, Virginia. In the fall, she will be entering the

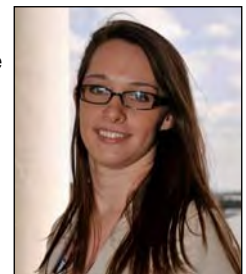


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graduate program in leadership and management at Liberty University.

LEANNE PATTON

Project and Academic Advisor: Paul Ryan

Type of Project: Senior Project

Presentation Category: Visual or audio-visual creation

Title: Watching Time Go By

Abstract: Time is such an unstoppable force; it is humbling to consider how much control it has over our lives, and how precious it becomes as we experience more of it. This body of work is an investigation of the passing of time visually, through the changing of seasons. As time passes, a landscape's outward appearances are regularly altered, each day and month bring about new developments and changes, while underneath it remains constant. These paintings depict many individual moments together at once, as parts of a landscape's entire life – a single painting in this series may only portray the passing of one year, one season to the next, or just one day. They are a study of what regularly passes us by, to highlight how so much beauty is created in just one place, and how the seasons mark time's steady and inescapable progression.

Biography: Leanne Patton is a studio art major with minors in education and leadership studies who proudly



PHOTO COURTESY OF LEANNE PATTON

claims Fancy Gap, Virginia, as her home. She is hoping to begin her career as an art teacher in the fall of 2012, somewhere in Virginia.

AMBER PHILLIPS

Project Advisor: John Wells

Academic Advisor: Carey Usher

Type of Project: Senior Project

Presentation Category: Delivered paper

Title: Towards an Iron Cage of Modern Society

Abstract: From its earliest foundations, sociologists have examined the problems inherent in the emerging Western capitalistic system in the nineteenth century. The rise and continuance of modern bureaucracy and formal organizations have provided a long and rich history. This sociological study will examine the theoretical traditions of formal organizations, with a focus on social and formal interactions within the hierarchy, and how these compare to concrete examples in efficiency of bureaucracy. The result will be to present a more in-depth understating of the main functions of formal organizations and ascertain to what extent organizations follow the fundamentals set forth in their rules and regulations.

Biography: Amber Phillips is a sociology/psychology interdisciplinary major from Churchton, Maryland. She has



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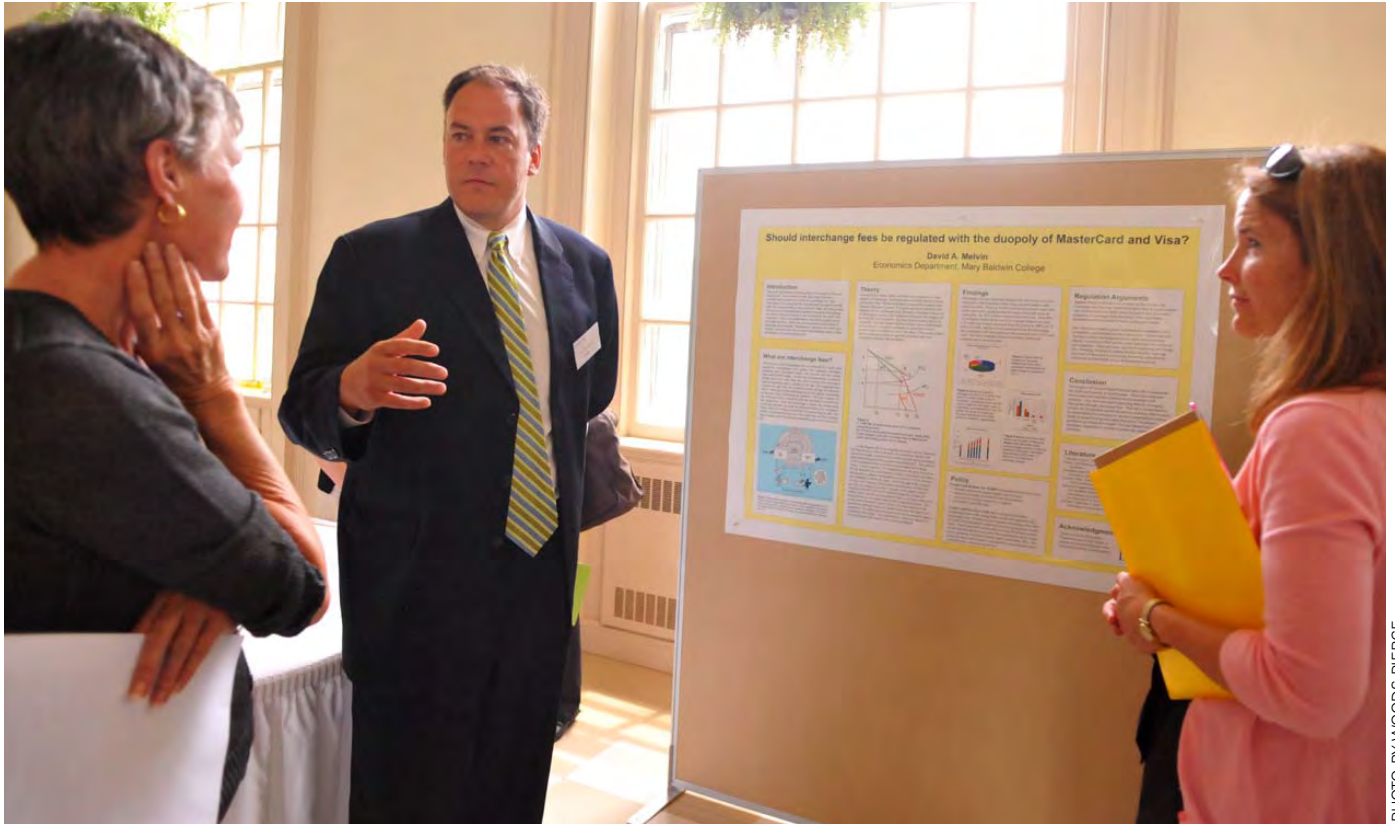


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worked as an Office Automation Clerk in the STEP program for the U.S. Census Bureau for two years. Upon graduation, Amber will be attending the University of Maryland, Baltimore County to pursue a Master's Degree in Applied Sociology while continuing to work for the U.S. Census Bureau.

MICHELLE PINSKY

Project and Academic Advisors: Claire Kent and Theresa Rollison

Type of Project: Honors Thesis

Presentation Category: Presentation with multi-media support

Title: BodyTalk: A Non-Profit Approach to Body-focused Repetitive Behavior Self-help in Adolescents and Young Adults

Abstract: Approximately one person in twenty suffers from some kind of body-focused repetitive behavior (BFRB), such as skin picking, nail biting, or hair pulling. Starting around the age of puberty, these behaviors can cost thousands of dollars in treatments that are not necessarily guaranteed to work—dollars many adolescents and young adults may not have access to. BodyTalk is a response to this need, focusing on creating an online social networking self-help website that encourages constructive goal-setting habits to track one's BFRB-related behaviors



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through an incentivized program. Working on a basic positive reinforcement model, BodyTalk users can earn coins in which to purchase BFRB-related items (such as fiddle toys, makeup, and deterrents) free of monetary expense. Through its service, BodyTalk hopes its users will achieve a greater understanding of their disorder and will gain the skill set for coping with their BFRB in a positive manner.

Biography: Michelle Pinsky is a double major in marketing communication and graphic design from Richmond, Virginia. Last November, she accepted work at KOR Food Innovation—a full-scale marketing and advertising firm for culinary businesses—and will continue there full-time as a designer and project manager after graduation.

VICTORIA ROSBOROUGH

Project and Academic Advisor: Nadine Gergel-Hackett

Type of Project: Senior Project

Presentation Category: Poster

Title: Electrical Characterization of Flexible Titanium Dioxide Memristors

Abstract: The memristor is a new fundamental circuit element with a resistance that depends on the magnitude and polarity of the voltage applied to it and the length of time that voltage is applied. Memristors are also nonvolatile, which means that when the bias is removed, a memristor retains its last resistive state. While memristors have potential applications ranging from alternative computer architectures to memory in inexpensive lightweight wearable sensors, the mechanism behind its

switching is not well understood. One of the major questions to be resolved is whether memristive switching is electric field dependent or charge dependent. In the former case, a minimum bias is needed for switching to occur. In the latter case, a minimum amount of charge needs to pass through the device to cause switching. I will present the results of electrically characterizing flexible memristors consisting of a nm-thick layer of TiO₂ sandwiched between two metal contacts in an effort to help establish whether their switching is charge or field-driven.

Biography: Victoria Rosborough is a physics major with minors in chemistry and mathematics. She is from Durham, Connecticut. She plans on going to graduate school and pursuing a career in condensed matter research.



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1992; Sharpe & Fuller, 1995), suggesting that educational experiences of female STEM majors may differ by institution type. To investigate this possibility, female undergraduates (N=113, to date) completed items from the National Survey for Student Engagement, a commitment to major scale, a social coping scale and the Career Decision-Making Self-Efficacy scale. Preliminary analyses suggest that social coping and career decision-making self-efficacy are related to commitment of women STEM majors at both single-sex schools and co-educational schools, but support for the relationship between academic engagement and commitment was found only in women STEM majors at single sex schools.

Biography: Abbey Senn is a psychology major with a minor in mathematics. Her hometown is Severna Park, Maryland. In the future, she plans to enter a Ph.D. program in quantitative psychology.



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ALEXANDRA SANNE

Project Advisor: Gordon Bowen

Type of Project: Senior Project

Presentation Category: Multimedia Presentation

Title: Journey To Radicalization: How Three American-Born Citizens Became Extremist Muslim Terrorists

Abstract: In June of 2009, former Memphis resident Carlos Bledsoe shot two United States Army recruiters in Little Rock, Arkansas. That same year, Major Nidal Hasan shot over forty US Army members in Fort Hood, Texas. Finally, Zachary Chesser was arrested in 2010 on counts of providing support to a terrorist organization, as well as communicating threats. Each of these cases involved a domestically born converted Muslim.

In this study, the cases were analyzed through the use of two main theories: the NYPD Theory and the Tomas Precht Study. These theories, while similar, differentiate each case and attempt to explain the recent phenomenon of homegrown terrorism.

Biography: Alexandra Sanne is an international relations major with a minor in economics. She is from Sacramento, California. After graduation, she will be working in media consulting while earning her Master's of Business Administration in marketing.



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ASMA SHETHWALA

Project Advisors: Abigail Wightman and Paula Davis-Olwell

Academic Advisor: Paul Deeble

Type of Project: Senior Project

Presentation Category: Poster

Title: Polycystic Ovary Syndrome: The Pathological, Physiological, and Sociocultural Effects on Women

Abstract: Polycystic Ovary Syndrome (PCOS) is one of the most common endocrine disorders in women of childbearing age, resulting in a variety of health problems such as infertility, obesity, acne, hirsutism (abnormal hair growth on a female's body) and insulin resistance. The purpose of this research is to examine the effect of PCOS diagnosis and symptoms on patients' view of body image, gender identity, and femininity within the cultural context of contemporary American society. Data indicate that the increased rate of PCOS is partly the consequence of medicalization of the syndrome, increased use of synthetic hormones in the diet and environment, and, to some extent, a sedentary lifestyle. In addition, interviews conducted with women diagnosed with PCOS suggest that symptoms such as hirsutism, obesity and infertility affect women socially and culturally, as well as physically.

Biography: Asma Shethwala is a medical anthropology major with minors in health care administration and leadership. She is from Richmond, Virginia. She hopes to work in hospital administration or in medical ethics consultation both here and abroad. Currently, she is concentrating on raising a family.



PHOTO BY WOODS PIERCE

ABBIE SENN

Project and Academic Advisor: Chandra Mason

Type of Project: Senior Project

Presentation Category: Poster

Title: Undergraduate Women's Educational Experiences and Choice of Major

Abstract: Although women now make up the majority of the undergraduate population in the United States, their numbers in the Science, Technology, Engineering and Mathematics (STEM) fields have remained disproportionately low (Morganson, 2010). Women's colleges, however, have historically produced more female STEM majors than co-educational institutions (Sebrechts,

Type of Project: Senior Project

Presentation Category: Visual or audio-visual creation

Title: Blue Pepper Album Design

Abstract: Blue Pepper Designs is a newborn brand dedicated to crafting beautifully designed promotional products for musicians. Aimed at blurring the lines between commercial and fine art, the Blue Pepper album kits were created for three local bands to sell and promote their latest musical endeavors. In keeping with Blue Pepper's mission, illustrations were custom works of art, hand-drawn type was used where appropriate, and many of the products were screen printed due to how well this form of art lends itself to commercial applications. Each kit consists of an album design, complete with a lyric booklet, a promotional product, a poster, and a press kit to send to record companies and magazines. The Blue Pepper brand is not a hypothetical invention. Real clients were provided with a real service — enough of each element in their kit to meet the demand of their fan base. Realistically, Blue Pepper is a small entity with limited means, so resourcefulness was key. Twenty-five to one-hundred albums and varying numbers of posters and products were produced for each band on a budget of less than \$250 per kit. In addition to the kits, this project included an event organized and promoted by Blue Pepper during which each band performed and was able to sell their products.

Biography: A native of Staunton, Virginia, Renee Shuey is studio-art major emphasizing in graphic design and ceramics. She hopes to attend graduate school in the future to receive her Master's in Fine Arts. In the meantime, she will continue her freelance work designing for music promotion.



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OLIVIA SICIGNANO

Project Advisor: Sara James and Marlena Hobson

Academic Advisor: Sara James

Type of Project: Honors Thesis

Presentation Category: Presentation with multi-media support

Title: Pontormo, Florence and the Capponi Chapel: A Fresh Look at the Chapel in Context of the Florentine World

Abstract: For centuries, the painted cycle of works by Il Pontormo in the Capponi Chapel at Santa Felicita in Florence have been an enigma. Often the paintings of the chapel have been studied in isolation. Olivia endeavored to find a cohesive visual program that encompassed all pieces of the chapel cycle. She then placed the chapel interpretation back into the context of the artist's life and the political, cultural, and religious events occurring in early sixteenth century Florence and in greater Italy.

Biography: Olivia Sicignano is a Global Honors Scholar with an art



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history major from Winston-Salem, North Carolina. She has worked as a curatorial research intern at Asheville Art Museum and as an education intern at the Reynolda House Museum for American Art. This fall she will attend a graduate program in museum studies or art history in Florence, Italy.

AUBREY SPARKS

Project Advisor: James Gilman,

Academic Advisors: James Gilman and Laura van Assendelft

Type of Project: Senior Project

Presentation Category: Delivered paper

Title: The Existence of an External World: Solutions to Solipsism and the Philosophy of William James

Abstract: Philosophy's search for the true nature of reality has been continuously hindered by the issue of solipsism.

This problem concerns the existence of an external world and the legitimacy of the knowledge that we can possess of that world: can we, as fallible human beings with fallible senses, be truly certain that our knowledge of the external world is accurate, and in the same vein, if that external world even exists? Without certain knowledge of an external world, philosophies are forced to make a presupposition of this basic fact and are therefore weakened by this seemingly unassailable issue. The focus of this paper is an examination of the proposed solutions to solipsism, with a particular emphasis on the epistemology of William James. Through this examination it seeks to integrate these solutions and their critiques into a unique proof against solipsism.

Biography: Aubrey Sparks is a junior from Williamsport, Maryland, studying philosophy and political science with a minor in conflict resolution and peacemaking. After graduating, she hopes to go to law school.

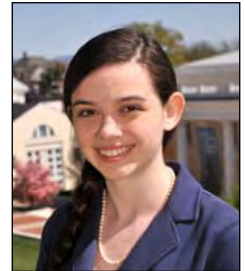


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JILLIAN STUBBS

Project Advisor: Joseph Sprangel

Academic Advisor: Janet Ewing

Type of Project: Senior Project

Presentation Category: Presentation with multi-media support

Title: The Power of Electric Vehicles: Electricity as an Alternative Fuel

Abstract: With the rise of the increasingly popular green movement, what are the potential economic, environmental and political impacts of integrating Electric Vehicles (EVs) into the community? There are various types of EVs, with the main focus being plug-in electric vehicles (PEVs), which run solely on electric power. The electricity that is used to power vehicles is transmitted via the existing electrical grid, and then stored within the vehicle's batteries. This paper examines the electrical aspect of electric alternative fuel and its efficiency for users, the planet, and the consumer's pocket. Financially, there are minor drawbacks to PEVs, but, as the concern

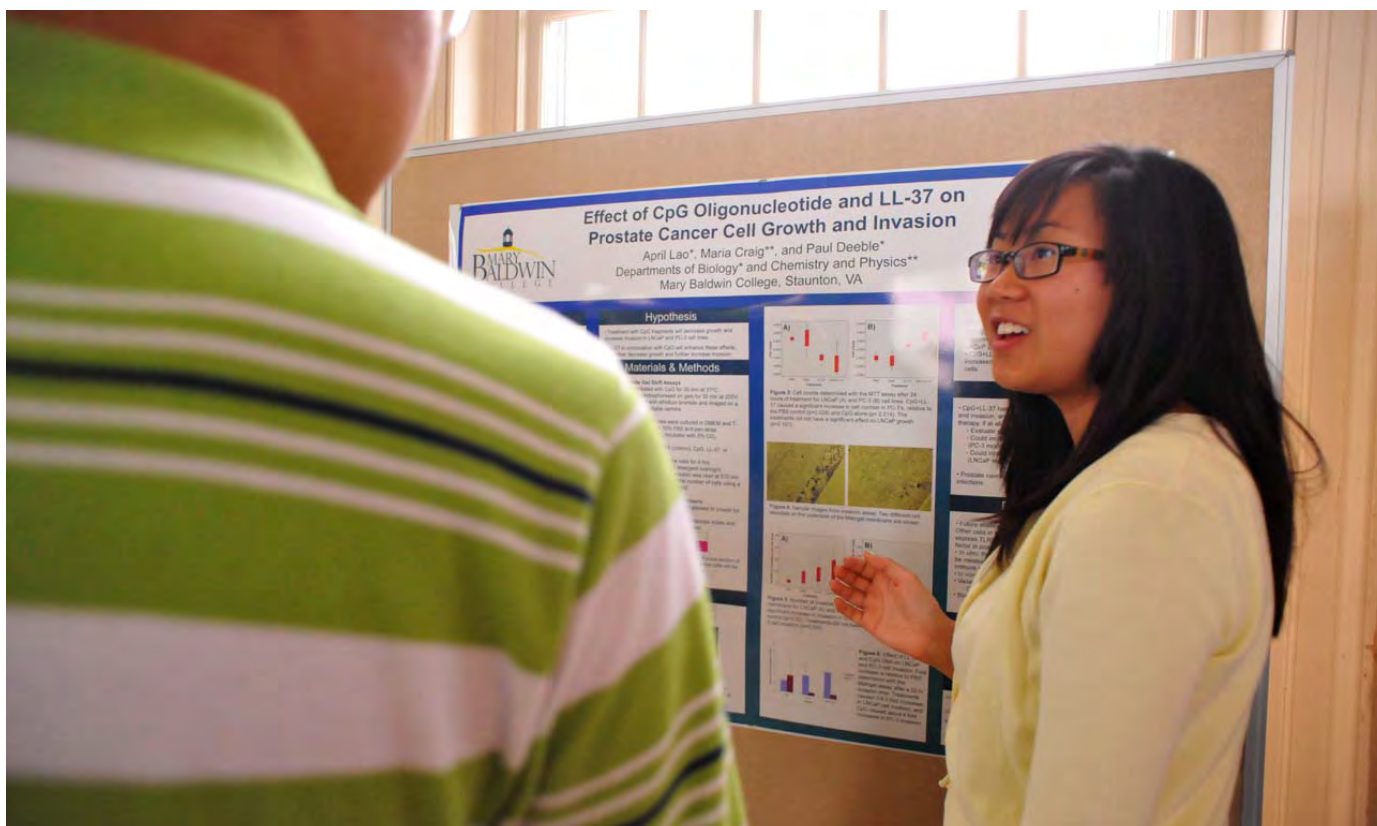


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Participants in the 2011 Capstone Festival.

for the world's well-being becomes increasingly important to the future of our environment and society, electricity can drive automobiles down the highway of success.

Biography: Jillian Stubbs is from Angier, North Carolina, and is majoring in sustainable business (B.S.) with minors in leadership studies and chemistry. She has been actively involved in the Virginia Women's Institute for Leadership, this year holding the position of Executive Officer. She was a two-year captain for the Varsity soccer team and after graduation plans on attending dental school.



PHOTO BY WOODS PIERCE

JACKLYN STUTTS

Project and Academic Advisor: Daniel Métraux

Type of Project: Senior Project

Presentation Category: Presentation with multi-media support

Title: Japanese Host Boys: Seeking Individuality, Gaining Social Isolation

Abstract: Japanese Host Clubs are a form of nightlife entertainment where women pay a high price to drink in the company of uniquely styled and characterized men known as hosts. This thesis seeks to create an accurate image of a modern host club, refuting misconceptions of the industry through the personal stories of customers and

hosts. Hosts have become demonized in the Japanese social conscious as men who prey on lonely women, making them spend a fortune on their false affection, when in fact it is more often the men that are victimized by the industry.

Biography: Jacklyn Stutts is an Asian Studies major with a minor in film, emphasizing production. She spent an academic year abroad in Japan at Doshisha Women's College and Kansai Gaidai University. After graduation she plans to return to Japan as an English teacher and pursue documentary film-making as a hobby.

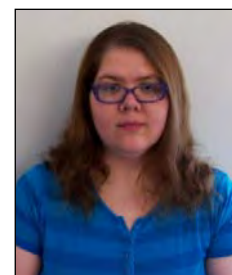


PHOTO COURTESY OF JACKLYN STUTTS

SHARMEKA WILLIAMS

Project Advisor: Katherine Turner

Academic Advisor: Sarah Kennedy

Type of Project: Senior Project

Presentation Category: Delivered paper

Title: "Sufficient to Have Stood, Though Free to Fall": Eve As a Role-Model

Abstract: John Milton's Paradise Lost (1667-74) retells the fall of mankind described in the book of Genesis, adding considerable detail. Milton's Eve is a vehicle for the notion of free will and personal choice; she is the first human to sin and the first to take responsibility. Eve's ability to humbly seek repentance and forgiveness, even when she

is not fully to blame, characterizes her as a role-model for the imperfect human race. She is a sinner who accepts full responsibility for her actions and seeks redemption. In contrast, Satan never repents for his sins and Adam is more interested in skirting blame than repenting. Milton's poem radically reshaped traditional



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perceptions of sin, responsibility and gender by making Eve the full embodiment of the human.

Biography: Sharmeka Williams is from South Boston, Virginia. She is an English major with minors in education and leadership studies. After graduating from Mary Baldwin, Sharmeka will enter into the Master's in Teaching program through Mary Baldwin College.

Congratulations to all students participating in the 2012 CAPSTONE FESTIVAL

Nomination to the Capstone Festival is in itself a high honor. To recognize extraordinary achievement, top honors will also be given in each presentation category (delivered papers; presentations with multi-media support; posters; and visual/audio-visual creations). Panels of three judges will evaluate the creativity, challenge, and execution of the projects as well as the ability of the presenters to communicate the content and significance of their work to a general audience. Top honors awards are accompanied by a cash prize of \$150.



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Participants in the 2011 Capstone Festival.

MAY TERM ABROAD CAPSTONE NOMINEES

The following students were nominated for the Capstone Festival but are unable to participate because they are on study abroad programs during May Term. We include their information here in recognition of their achievement and commitment to international awareness.

CANDACE CHRISTY

Project Advisor: Paul Ryan

Type of Project: Senior Project

Title: Making

Abstract: "Making" is a 3-D exploration of drawing via installation. Through the arrangement of handmade objects, found objects, prepared and spontaneous wall drawings, this work exhibits key elements of formal drawing. Emphasis on experimentation of texture, line, shape/form, space, and the effect of light and shadow connect the composition on whole. Reference is made to organic shape and function, mimicking burrow-like structures of various insects and birds.

Biography: Candace Christy is a studio art major with a double emphasis in printmaking and drawing as well as a minor in art history. Originally from Virginia Beach, Candace now resides in Staunton, Virginia, and intends on living there after graduation while pursuing her interests in art.

CAITLIN HENCK

Project and Academic Advisor: Amy Diduch

Type of Project: Senior Project

Title: The Link between Industry Concentration, Trade Flows, and Dollar Depreciation

Abstract: Throughout my thesis research, I have attempted to answer the following question: "Is there a relationship between industrial concentration and the degree to which dollar depreciation will change import or export quantities for the United States?" Through extensive literature review, I found that industry concentration does account for certain export and import fluctuations. In addition, a depreciated home currency is typically linked with increased exports and decreased imports. Theory, however, tells us that highly concentrated firms may not fall so easily into this stereotype, as they are price makers rather than price takers. Data collection and statistical analysis yielded results that support the conclusion that highly concentrated industries are not nearly as responsive for both exports and imports during depreciation of the dollar, compared to less concentrated industries. In turn, support for a 'strong dollar policy' as promoted by U.S. politicians may be more myth than math. More effective policy during a period of a weakened dollar could come in the form of aid to export-intensive industries and import-competing industries, further spurring domestic employment opportunities.

Biography: Caitlin Henck is an international business and economics major with a minor in sexuality and gender studies, hailing from Baltimore, Maryland. She has held leadership positions with the Spencer Center, Ida B. Wells, SOULS, and Residence Life. She will join the workforce in May and later attend graduate school.

CYNTHIA KIRKLAND

Project and Academic Advisor: Daniel Métraux

Type of Project: Senior Project

Title: Bosozoku: The Rise and Decline of a Subculture

Abstract: As general affluence began to take root in Japan during the closing years of the 1960s, values began to change as increased time for leisure led many to reevaluate their lives. Group

dynamics defined by an unyielding work ethic, Confucian-based models of loyalty, and a vast array of unspoken social obligations were beginning to fade. The power of the purse paved the way for increased opportunities for self-expression through consumerism pinnacled by the lucrative fashion business. The proliferation and membership in deviant groups, united by fashion and found loitering on the streets of Tokyo's youth districts, seemed to disturb older generations. More frightening was the notion that appearance was sometimes more than a fashion statement. Bosozoku, or "speed tribes," astride unmuffled and modified motorcycles, stood apart from their purely consumerist counterparts because of their adversarial image. Their rise can be associated with a static educational meritocracy, unspoken class discrimination, rigid social expectations, and dissolved family structure. However, bosozoku youth refuse to be victims of their own culture and instead speed bikes through the midnight streets of Japan

Biography: Cynthia Kirkland is a double major in studio art and Asian Studies; she hails from Woodbridge, Virginia. Winner in the Audio/Visual Category for her senior project in studio art at Capstone 2011, she hopes to utilize her experience and has sent her resume to a design firm in L.A. and the International Center of Walt Disney World.

KATELYN RACICOT

Project and Academic Advisor: Steven Mosher

Type of Project: Senior Project

Title: 1918 Influenza Pandemic: Role and Function of the Richmond City Health Department

Abstract: Between the years of 1918 to 1919, the influenza pandemic killed about one-third of the world's population and caused an estimated 50 million deaths worldwide. The purpose of this research paper is to analyze the role of the Richmond City Health Department during the 1918 influenza pandemic. This involves what the Richmond City Health Department did in response to what was happening in Richmond, such as implementing nonpharmaceutical interventions and creating public awareness of the disease. The 1918 influenza had a significant impact on the Richmond City Health Department. Because the death rates due to influenza in Richmond were escalating, the Richmond City Health Department worked hard in conjunction with other organizations, such as the American Red Cross and the Public Health Service, to implement various interventions to slow and ultimately stop the spread of influenza. The nonpharmaceutical interventions that the Richmond City Health Department helped create, implement, and enforce included banning school gatherings, closing schools, banning spitting on public grounds, wearing face masks, and educating the public about the dangers of influenza and how to protect themselves from contracting influenza. The Richmond City Health Department had many responsibilities during the 1918 influenza pandemic, but the occurrence of this pandemic forced the health department to uphold their mission and protect the health of the residents of Richmond City.

Biography: Katelyn Racicot is a health care administration major with an emphasis in public health. She is from Virginia Beach, Virginia, and hopes to attend medical school in the fall.

