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

SENIOR PROJECTS • HONORS PROJECTS • SPECIAL PROJECTS

MAY 10, 2018

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.

#MBUCapstone
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 townpeople attended to view students parse sentences, do intricate math problems, and recite soliloquies,” wrote 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. The 2017 Festival marked the first as Mary Baldwin University.

At each year’s festival, a select group of students, nominated by faculty, present their senior, honors, and special undergraduate research projects to the MBU 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 2018 Capstone Festival is made possible through the support of the MBU Advisory Board of Visitors, the Office of Sponsored Programs and The 2018 Capstone Festival is made possible through the support of the Office of Sponsored Programs and the scholarship, and creative activities on display is a testament to the legacy of those earlier years and a celebration of our future.

“Mood of the country” is an often-overlooked variable because it is difficult to measure, but failing to identify the mood in a presidential election raises questions about the effect of “mood of the country” in relation to the incumbency advantage. “Mood of the country” is an often-overlooked variable because it is difficult to measure, but failing to identify the mood in an election may cause unexplained results. In this study, I analyzed National Election Studies data from the 2000-2016 presidential elections to determine if “mood” influenced the election and re-election of George W. Bush and Barack Obama.

CARTER ANDERSON
Project and Academic Advisor: Beth Easterling
Type of Project: Senior Project
Presentation Category: Presentation with multimedia support
Title: The Application of Restorative Justice to Violent Juvenile Offenders
Abstract: Restorative methods (such as juvenile detention centers and the school-to-prison pipeline) have failed in reducing juvenile violence, a growing problem in the United States. The purpose of this research is to explore an alternative method for reducing juvenile violence, known as restorative justice, which focuses on mending the relationships between the offender, victim, and community. Scientific studies indicate that the differences between juveniles and adults are substantial enough to warrant differing consequences, and case studies suggest that restorative justice may work well as an alternative method for juveniles, both in the context of the juvenile justice system and in schools. My research indicates that restorative justice has the potential to reduce the recidivism rate of violent juvenile offenders, as well as reduce violence in schools, thus reducing the number of juveniles in the criminal justice system overall.

Biography: Carter Anderson is a double major in criminal justice and history. She was born in Germany and currently lives in Dunkirk, Maryland. She is a member of Alpha Phi Sigma, Phi Alpha Theta, and Alpha Lambda Delta. In the fall, Carter will enter the Creative Writing MFA program at Kingston University.

DIAMONIQUE ANDERSON
Project and Academic Advisor: Laura van Asandel
Type of Project: Senior Project
Presentation Category: Presentation with multimedia support
Title: Why Did the Incumbency Advantage Not Predict the 2016 Presidential Election?
Abstract: Prior to the 2016 Presidential election, the Democratic Party possessed what political scientists identify as an “incumbency advantage.” Americans have elected populist candidates in the past, but the 2016 election was unusual because Donald Trump was not predicted to beat the politically established Hillary Clinton. The unpredictability of the 2016 Presidential election raises questions about the effect of “mood of the country” in relation to the incumbency advantage.

Biography: Diamonique Anderson is a political science major from Chesterfield, Virginia. She is interested in pursuing a job in foreign affairs or public policy. She plans to pursue fellowship opportunities during her gap year to solidify her interests before graduate school.

ALAYAH AUSTIN
Project and Academic Advisor: Amy Tillerson-Brown and Mary Hill Cole
Type of Project: Senior Project
Presentation Category: Presentation with multimedia support
Title: Land-Grant Schools in Virginia, VSU and VPI, 1860-1955: Quest for Equity
Abstract: Virginia’s two land-grant schools, Virginia State University (VSU) and Virginia Polytechnic Institute and State University (VPI), emerged from the Morrill Act of 1862 but were later justified from the Morrill Act of 1890. The Morrill Act of 1890 established the legal separation of educational facilities throughout the nation based on race before the Plessy vs. Ferguson case in 1896. This bill stated that states will only receive funding for land-grant schools that discriminated on race were required to provide a school for each race and that funds allocated by the state to those schools must be equal in all respects. Despite the Morrill Act of 1890, however, Virginia’s Black land-grant school never received the same funds as the White land-grant school.

Biography: Alayah Austin is a history major, with a minor in mathematics and African-American studies, from Newport News, Virginia. She is a member of Phi Alpha Theta and Alpha Lambda Delta. In the fall, she plans to attend graduate school.

VALERIE BAIRES
Project and Academic Advisor: Bruce Doree
Type of Project: Senior Project
Presentation Category: Presentation with multimedia support
Title: Into the Fox’s Den: An External Organizational Communications Audit of Fox News Using Systems Theory
Abstract: Fox News Channel is an American cable network and political commentary channel that was launched in 1996. Fox News has a standing history of media bias, with a policy of supporting conservative ideas. Through the aid of Rupert Murdoch and political consultant Roger Ailes, Fox News has been able to become one of the most valuable brands in the world. In order to fully understand how Fox News has reached this point, it is important to understand how its external communications function. This study is an organizational communications audit of Fox News’ external communications using systems theory, which includes recommendations for the organization.

Biography: Valerie Baires is currently a senior at Mary Baldwin University, majoring in marketing communications with a double minor in Latin American studies and religious leadership and ministry. Upon graduation, Valerie intends to travel to Costa Rica with the Peace Corps, working with developing communities to launch sustainable businesses.
SUSAN BLACKBURN
Project and Academic Advisor: Maria Craig
Type of Project: Senior Project
Presentation Category: Poster
Title: The Effects of CRISPR-Cas9 Mediated Knockout of NOX4 in GL-261 Cells

Abstract: Glialblastoma is a lethal, aggressive type of brain tumor and are difficult to treat. Currently, the median survival for this type of cancer is just over a year and there are no effective long-term treatments. NOA4 oxidase 4 (NOX4) and the reactive oxygen species (ROS) it produces have been associated with cancer progression in certain cell types, including cervical cancer, non-small cell lung cancer, and some glioma cell lines. This study utilized CRISPR-Cas9, a relatively new genome editing system, to examine the role of NOX4 in GL-261 cells, a murine glioma cell line, by "knocking out" the NOX4 gene. This work, which is still in progress, initially demonstrated that NOX4 was expressed in GL-261 cells. GL-261 cells were found to be relatively difficult to transfect with the NOX4 CRISPR gRNA constructs so troubleshooting was completed to confirm the optimal parameters for knockdown of NOX4 gene expression. Following successful transfection of the NOX4 CRISPR-gRNA constructs, assays measuring effects on proliferation and migration will be undertaken with the long-term goal of characterizing the role of NOX4 in the tumorigenic profile of GL-261 cells.

Biography: Susan Blackburn is a biology major and chemistry minor from Crozet, Virginia, who is in the process of applying to medical schools.

CASSANDRA LIN BRAGDON
Project and Academic Advisor: Abigail Carinder
Type of Project: Senior Project
Presentation Category: Presentation
Title: Eclipsing the Sun: Conformity and Agency in Modern Japan

Abstract: This study focuses on the way that modern Japanese women conform to "traditional" gender roles as a vehicle of culturally-constrained agency. The first section explores the nationalism of gender ideology during the Meiji Period as a development tool of the state, as well as the socio-cultural effects of the 1990s recession. The second section discusses the results of a questionnaire on gender ideology and life choices sent to female Japanese college students in October 2017 and compares the results to previous studies and standard data. Finally, the analysis focuses on anthropological theories of agency and how Japanese women actualize them today.

Biography: Cassandra Bragdon is an anthropology/sociology and international affairs major from Mont Vernon, New Hampshire. She was elected to Phi Beta Kappa this spring. In the fall, Cassie will attend the Graduate Institute of International and Development Studies in Geneva, Switzerland, pursuing an MA in the Anthropology and Sociology of Development.

ABIGAIL CARINDER
Project Advisor: John Orng
Academic Advisor: Maria Craig
Type of Project: Senior Project
Presentation Category: Presentation and multi-media support
Title: Auto-Correct: A Look at DNA Assembly Using the Levenshtein Distance

Abstract: Bioinformatics is a field of mathematical analysis of genomics that depends on the ability to assemble DNA for analysis. The assembly process is based on graph theory and utilizes circuits without any context to the DNA being analyzed when there is no reference genome. This project used classes of organisms with similar genes as a reference base and created a more accurate assembly with the Levenshtein distance. The Levenshtein distance is a string metric used in current auto-correct features. Auto-correct suggests possible alternatives based on misspellings or context clues in advanced algorithms, using distance between words. Auto-correct dictionaries are based on what we know and what we want it to automatically suggest to the user. These dictionaries were compiled and analyzed for nucleotides and words for genes, the same process of auto-correct that assists our day to day life was applied to DNA assembly. This project resulted in a working model for more accurate DNA assembly using Mycoplasma genitalium genes.

Project Advisor: Peter Ruiz-Huas
Academic Advisor: Maria Craig
Type of Project: Senior Project
Title: Removing Biphrenca L (BPS) with UV Light, Titanium Dioxide, and Hydrogen Peroxide

Abstract: Biphrenca L (BPS) is a common replacement for biphrenca A (BPA). Both compounds have been determined to be endocrine disrupting compounds (EDC). The increased use of BPS makes it necessary to understand its fate in wastewater treatment. In this study, the destruction of BPS with advanced oxidation (AOX) processes that employ a combination of UV irradiation and hydrogen peroxide (H2O2) or titanium dioxide (TiO2), was examined. Both H2O2 and TiO2 AOX can destroy organic contaminants through generation of radical species. In this research, H2O2/AOX at 7% w/v H2O2, with UV light breaks down over 80% of BPS in a 5 mL solution in under 2 hours. Exposure to 7% w/v H2O2/AOX in powdered form instantly reduces the amount of BPS present in a 5 mL solution by half, though continued exposure does not increase the degradation.

Biography: Abigail Carinder is a double major in chemistry and math from Durham, North Carolina. Following graduation, she hopes to pursue work in analytics or big data before returning to education for a higher degree.

ANNAPURNA CHITNAVIS
Project and Academic Advisor: Maria Craig
Type of Project: Senior Project
Presentation Category: Poster
Title: The Effects of Varying Vitamin D3 Concentration on LL-37 Production in THP-1 Cells

Abstract: One way in which the innate immune system, an immediately active first line of defense, protects against infection is by producing antimicrobial peptides (AMPs). Cathelicidins are an important family of AMPs that establish an antimicrobial barrier at epithelial interfaces, such as the skin. LL-37 is the only cathelicidin-derived AMP found in humans. In autoimmune skin disorders, LL-37 production is often altered, and vitamin D3, the metabolically active form of vitamin D, has been shown to produce the induction of LL-37. In order to determine the relationship between vitamin D3 levels and amount of LL-37 produced, human monocyte THP-1 cells were cultured in varying concentrations of vitamin D3. The cell culture supernatant and lysate were collected bybriefly and analyzed via total protein assays and LL-37-specific immunoblotting. Based on the results obtained, the student proposed to further experiment in order to establish the relationship between concentration of vitamin D3 used in cell treatment and amount of LL-37 produced.

Biography: Annapurna Chitnavis is a biochemistry major with minors in mathematics and piano performance. Her hometown is Phoenix, Arizona. Annapurna has been elected to Phi Beta Kappa and is the recipient of the Outstanding Chemistry Student Award for 2018. She has a strong passion for helping children and plans to pursue a career in medicine.

ASHLEY CURLEY
Project and Academic Advisor: Ophelia Dorosz
Type of Project: Senior Project
Presentation Category: Presentation and multi-media support
Title: External Communication in the Modern Age: An Analysis of the Trump Administration’s External Communication

Abstract: The 45th president's use of Twitter is unprecedented; nearly every day in the United States, there is at least one news story covering something the president tweeted. However, this form of communication has led to some disconnect with other White House communication systems. To explore this phenomenon, a survey of an administration, communication must be effective and comprehensive, and lack of effective communication can result in a loss of allies, resources, and constituent support. This project analyzed the White House's external communications, focusing on the relationship between traditional and modern communication in the 21st century.

Biography: Ashley Curley is a marketing and communication major and philosophy minor from Mechanicsville, Virginia. She plans on attending graduate school for philosophy to pursue a career as a professor.

KAELYN DICKINSON
Type of Project: Senior Project
Presentation Category: Presentation
Title: Modern Medicine: The Impact of Telemedicine in Texas Corrections

Abstract: In the late 20th century, the emergence of technology contributed to innovative health care reforms, including telemedicine – the use of telecommunication and information technology to provide health care from a distance. As telemedicine and its technologies have expanded, so has the demographic that it serves. Telemedicine is not limited to the civilian health care system; its current reach includes inmate populations. By definition, "correctional telemedicine" can be defined as the application of technology to assess, diagnose, or treat a patient’s medical condition in any correctional setting. Considering the variance in needs and access, the researcher investigated the effectiveness of telemedicine in Texas correctional facilities prior to and post-1994. The year 1994 marks the introduction of telemedicine in Texas corrections. Texas was one of the first states to institute telemedicine in corrections and has one of the highest incarceration rates in the United States. The purpose of this research was to explore how the emergence of telemedicine made a progressive difference in correctional healthcare for Texas inmates.

Biography: Kaelyn Dickinson is a native of New Castle, Delaware and currently resides in Richmond, Virginia. She is a health care administration major with an emphasis in public health. Kaelyn has interned with Augusta Health Hospital in Staunton, Virginia, and Pfizer in Richmond, Virginia. She is a member of Upsilon Phi Delta, the National Society for Healthcare Administration and the 2018 recipient of the Mary Baldwin University Health Care Administration Award. In the future, Kaelyn aspires to work for the Centers for Disease Control and Prevention or the World Health Organization.

PRESIDENT TRUMP IN THE 21ST CENTURY
Project and Academic Advisor: Kaelyn Dickinson
Type of Project: Senior Project
Presentation Category: Poster
Title: The Effects of Varying Twitter use on Public Perception

Abstract: There have been numerous instances in which the president encountered issues with presenting a unified message. The media and public perception of a president can be impacted by the message that is portrayed by the media and updating the public on the president's agenda. The press secretary plays the role of controlling the message being portrayed by the media and updating the public on the president's agenda. This project analyzed the White House's communication, focusing on the relationship between traditional and modern communication in the 21st century. The press secretary's role in the role of controlling the message portrayed by the media and updating the public on the administration's platform. However, this administration has encountered presenting a unified message. There have been numerous instances in which the president tweeted something that contradicted statements made by a press secretary, resulting the appearance of a disorganized, unprofessional administration. Moving forward, the President and his press secretary must get together to unify their communications and consult one another about how and when to speak to the general public. Without this, there will continue to be a significant and damaging disconnect in communications, leading to further disapproval from constituents and lack of partisan support.

Biography: Ashley Curley is a marketing and communication major and philosophy minor from Mechanicsville, Virginia. She plans on attending graduate school for philosophy to pursue a career as a professor.
The Color Purple, encourages self-worth despite what society withstand time as well as evoke the emotion of love. Marj lullaby arranged by Scarlett Antaloczy shows that music can physiological factors can also contribute to the development and severity of both disorders. Hormone replacement therapy is one potential treatment for these conditions. For this therapy, women are prescribed either estrogen, progesterone or both to supplement the decreased levels of the hormones following menopause. This study reviewed the literature to determine which hormone replacement therapy is the most effective in treating these conditions. The scientific consensus of research to date indicates that estrogen replacement therapy is the most effective treatment. Biography: Kimberly Fennell is a health science major with a passion for women’s health. She hail from Richmond, Virginia. In the fall, Kimberly will be entering a Master of Health Administration program at Virginia Commonwealth University.

Jennifer Hancock
Senior Project
Presentation Category: Visual or audio-visual creation
Title: Asymmetry
Abstract: As buildings are left vacant, forgotten behind years of overgrowth, nature exhibits its tendency to reclaim its former property, creeping in through the walls whenever given the chance. These places exist in a world separate from that of our own, hidden from common awareness and accessible only by those who choose to notice. Through this series of photographs, Talula intends to explore nature’s inevitable reclamation of all man-made structures and the beauty that can be found in the layered textures of decomposing materials, as well as convey the experience of exploring once more world existing beyond our own.

Talula Mays is a studio art major with a minor in film from Staunton, Virginia. She works in a variety of mediums, including photography, painting, film, and sculpture. Her film, Delicacy, has been selected for the 2018 Richmond International Film Festival. Talula is a rising senior who plans to enter an MFA program after graduation.

Niranjana Menon
Project and Academic Advisor: Amy O’dutsch
Type of Project: Senior Project
Presentation Category: Visual or audio-visual creation
Title: Determinants of Monetary Demand and Velocity after Demonetization in India
Abstract: On November 8th, 2016, the Indian government decided to devalue 84% of the currency to tackle the problem of unaccounted currency and counterfeit money. This project analyzes the impact the demonetization initiative in India had on macroeconomic indicators such as velocity, money demand, and spending. Monetary velocity examines the rate at which currency is exchanged in the economy and has implications

Kelsey Jamerson
Project and Academic Advisor: Lisa Ketter
Type of Project: Senior Project
Presentation Category: Performance or reading
Title: Exploring 20th-Century Styles through the Music of Dependence: Robert Starr and Florence B. Price
Abstract: At the start of the 20th-century, composers stayed away from traditional rules and techniques and began experimenting with modern ideas. This program of piano music explores some of those new styles through works of American composers Robert Starr and Florence B. Price. Starr’s “Sketches in Color,” a set of seven pieces, illustrates a different 20th-century technique for each piece, or “color.” For example, the first piece, “Purple,” is very dissonant and mysterious because of its chromaticism. “Shades of Blue” shows the influence of jazz, with syncopation in the melody. “Blacks and White” is tonal because the melody and accompaniment have two distinct keys, each one symbolizing one of the races. Finally, “Gragas” is an example of Sufi mysticism and twelfth-century writing. “Tickled Toes,” Florence B. Price shows her individuality by incorporating her African-American heritage into the music. “Tickled Toes” is a cakewalk, which is an African-American dance with a distinctive rhythm.

Biography: Kelsey Jamerson is a music major with emphasis in piano performance from Chesapeake, Virginia. She studied piano with Dr. Lisa Ketter. Last year, Kelsey was chosen to perform in a master class with Simone Dinnerstein. After graduation, she plans to attend a graduate program in piano performance or music therapy.
on national spending and saving rates. Monetary velocity in India spiked post-demonetization due to a rise in electronic transactions, and predictions of monetary demand are strong indicators that show that velocity was impacted by facts other than monetary supply. The results provide insight on the usage of mass cash removal as a tactic to increase digitization and monetary accountability.

Biography: Marianna Moinihan is an economics major and math minor from Montclair, India. She is currently a junior in the PEG program and was elected to Pi Beta Kappa this spring. She conducted a research project on microfinance in China in 2017. She will be attending Duke University for a Master’s in Analytical Political Economy in the fall.

MARIANNA MOYNIHAN
Project and Academic Advisor: Donovan Branch
Type of Project: Senior Project
Presentation Category: Presentation with multi-media support

Title: A Journey to Wellness: African-American Misfit of the Health Care System
Abstract: This project reviews the history of African-Americans and how key historical events have altered the way that they view health care, especially in comparison to individuals of other races. Blacks have a higher-than-average rate of health issues and complications and also express significant mistrust of the health care system. This research paper traces these factors from the onset of the system and the lasting effects still lingering today, showing that past experiences have an influence on the future. Although there are not the only reasons for medical distrust, they clearly warrant careful study. I urge that ignoring past events and experiences will further the trust gap in medical services provided by persons who are not African-American.

Biography: Marianna is a health care administration major with an emphasis in public health. She is from Philadelphia, Pennsylvania. In the fall she will be entering a master’s program in disaster medicine and management at Thomas Jefferson University.

GISELLE OLIVERA
Project and Academic Advisor: Jim Scovens
Type of Project: Senior Project
Presentation Category: Visual or audio-visual creation

Title: The Complexity of Human Form
Abstract: The earliest artistic endeavors of our species unveil a fascination with the intricacies of the human form. In a matter of seconds, a visual language developed from posture, facial expression, composition, and innumerable other aspects is absorbed through the power of the glance. In artworks, representations of the human body are often intended to convey a certain notion of the subject. My senior painting thesis, The Complexity of Human Form, is to probe into the very perception of the human body within different contexts. Figure painting is poised in balance between change and stability, posing perhaps one of the greatest challenges of all: capturing the essence of a person, something that often seems to transcend visual expression, within a precise likeness. It is a search for the intangible force within each individual, just as it is in us, in order to perpetuate it for ages to come.

Biography: Giselle Olvera will graduate Phi Beta Kappa, magna cum laude, achieving a B.A. in Studio Arts with an Art History minor at BMU and the Fundamental Diploma in Florence, Italy. Her honors thesis, The Scientific Art of Pontormo, won the Russell Award at BMU. She received the Ulyse Desparres Award for Outstanding Achievement in Studio Art, and her work, including her portrait of Stephen Hawking at the University of Cambridge, is in the BMU art steam, two museums and two universities. Currently working with bioengineers on a systematic taxonomy of plant species and their uses in three different countries, her bachelor thesis on botanicals as anti-microbial species for book projects sponsored by the World Wildlife Fund.

DESTINY RODRIGUEZ
Project and Academic Advisor: Louise Freeman
Type of Project: Senior Project
Presentation Category: Poster
Title: The Effect of Caffeine on Anxiety in the Plus-Maze and Open-Field
Abstract: Caffeine increases anxiety both in humans and in animal models. In recent years, caffeine use has increased, especially among children and adolescents. Presently, much remains unknown about the long-term effects of caffeine and the later interventions. In Augusto Boal’s Theater of the Oppressed and Anne Bogart’s Viewpoints. Results show a significant decrease in defensiveness in one participant and a significant decrease in anxiety in the other participant. This study suggests that troubled teens might benefit from participating in exercises that include drama therapy processes.

Biography: Destiny Rodriguez is a psychology major from Columbus, Ohio. In the fall she will be working for a state psychiatric facility as a juvenile correctional officer for the psychology department and her parents.

AIBINAY SUBRAMANIAN
Project Advisor: Bruce Dominos Academic Advisor: Clare Kent
Type of Project: Senior Project
Presentation Category: Presentation with multi-media support

Title: Friendly Skies with a Few Turbulences: An Analysis of United Airlines Using Systems Theory
Abstract: In April 2017, social media went berserk when a video of an innocent passenger being beaten up and dragged off a United Airlines flight was released on the Internet. The incident was one of the worst cases of customer service ever seen, and the public relations that followed were a nightmare for the airline. Following this and several other issues to hit United, Abinaya conducted an external communication audit of the organization using systems theory to evaluate the effectiveness of their communication on social media, website and their overall media relations. After a thorough analysis of their communication, it was determined that the skies are friendly; they have a few turbulent skies happen to overcome. Biography: Abinaya Subramanian is a marketing and communications major with a double minor in digital and human resource management. In the fall, she will be entering a Master’s program in Public Relations and Corporate Communications, and then NU or Georgetown University.
Oxidation processes (AOPs). AOP techniques combine strong oxidants to destroy organic contaminants by radical attack.

ZINDI THOMPSON  
Project and Academic Advisor: Maria Craig  
Type of Project: Senior Project  
Presentation Category: Poster  
Title: The Time Dependence of LL-37 Upregulation by Vitamin D  
Abstract: Autoimmune diseases result from the body’s inability to distinguish itself from pathogens and are, essentially, the body’s immune system attacking itself. In the United States, the autoimmune disease psoriasis affects 7.5 million Americans and, in 2013, the total direct cost of psoriasis-associated treatment was around $50 billion (American Academy of Dermatology). LL-37, an antimicrobial peptide active in the immune system, is overexpressed in many autoimmune diseases, including psoriasis. Some studies show that vitamin D, which has been shown to have both positive and negative effects on immunity, upregulates the production of LL-37. To observe the relationship between vitamin D treatment and LL-37 production in immune cells, model macrophages (THP-1 cells) were incubated for various lengths of time in the presence and absence of vitamin D, and their contents, supernatants and lysates, were analyzed using methods including the dot blot antibody test and western blotting. Our data suggested that vitamin D upregulated the production of LL-37 in model macrophages after a 48-hour incubation, leading to increased amounts detected in cell supernatant. Our data suggested that vitamin D upregulated the production of LL-37 in model macrophages after a 48-hour incubation, leading to increased amounts detected in cell supernatant. "Our data suggested that vitamin D upregulated the production of LL-37 in model macrophages after a 48-hour incubation, leading to increased amounts detected in cell supernatant."  
Biography: Zindzi Thompson is a biochemistry major from Columbia, South Carolina. During her time at Mary Baldwin University, she has conducted research on LL-37 under the mentorship of Dr. Maria Craig. After graduation, Zindzi will matriculate at Meharry Medical College.

MARY RUTH WOSSUM-FISHER  
Project and Academic Advisor: Abigail Wightman  
Type of Project: Senior Project  
Presentation Category: Poster  
Title: Contextualizing the Murderous Ethnic Cleansing of the Rohingya: Rhetoric and Discourse  
Abstract: This project addresses the merged ethnic and political identities within Myanmar that led to the murderous ethnic cleansing of the Rohingya. The first section explores symbolic rhetoric that upholds existing oppressive power structures and is used to justify the violence. Elaborating on the origins of the Rohingya and the Rakhine ethnicities, the second section applies theories of ethnicity and identity to contextualize the rhetoric with Myanmar’s history. The concluding section explores how these ethnicities merged with governmental ideals to produce an environment conducive for murderous ethnic cleansing. With these analyses, potential situations of ethnic cleansing will more easily be identified. "This project addresses the merged ethnic and political identities within Myanmar that led to the murderous ethnic cleansing of the Rohingya. The first section explores symbolic rhetoric that upholds existing oppressive power structures and is used to justify the violence. Elaborating on the origins of the Rohingya and the Rakhine ethnicities, the second section applies theories of ethnicity and identity to contextualize the rhetoric with Myanmar’s history. The concluding section explores how these ethnicities merged with governmental ideals to produce an environment conducive for murderous ethnic cleansing. With these analyses, potential situations of ethnic cleansing will more easily be identified."  
Biography: Mary Ruth Wossum-Fisher is an anthropology/sociology and international affairs major with a minor in Francophone studies and was elected to Phi Beta Kappa this spring. She is from Pulaski, Tennessee, and will attend the University of Tennessee, Knoxville, next fall to pursue a master’s degree in cultural anthropology with multi-media support.

We conducted degradation experiments in buffered aqueous solutions containing 5 mg/L BPS. At concentrations of O₃ from 0.1 to 3.4 mg/L and 0.5 mg/L H₂O₂, we observed BPS degradation (measured by high performance liquid chromatography (HPLC)): 35% BPS remained at O₃ levels of 3.4 mg/L and a 10-minute reaction time. Substantially smaller degradation rates (<80% of BPS remaining) were observed at lower O₃ concentrations. Second order kinetics were observed that suggest a multi-step reaction mechanism, which were simplified to pseudo-first order kinetics. "We conducted degradation experiments in buffered aqueous solutions containing 5 mg/L BPS. At concentrations of O₃ from 0.1 to 3.4 mg/L and 0.5 mg/L H₂O₂, we observed BPS degradation (measured by high performance liquid chromatography (HPLC)): 35% BPS remained at O₃ levels of 3.4 mg/L and a 10-minute reaction time. Substantially smaller degradation rates (<80% of BPS remaining) were observed at lower O₃ concentrations. Second order kinetics were observed that suggest a multi-step reaction mechanism, which were simplified to pseudo-first order kinetics."  
Biography: Corinne Weeks is an applied mathematician major with minors in chemistry and physics. She is originally from Cincinnati, Ohio. In the fall, Corinne will be entering a Ph.D. program in chemical engineering at Stanford University.

CONGRATULATIONS  
TO ALL STUDENTS PARTICIPATING IN THE 2018 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 section. 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 provided through the generous sponsorship support of the MBU Advisory Board of Visitors.
THE CAPSTONE FESTIVAL IS MADE POSSIBLE THROUGH THE GENEROUS SPONSORSHIP OF THE FOLLOWING 2018 CORPORATE AND COMMUNITY PARTNERS:

**INVESTOR LEVEL**

HERSHEY | ITA | McKee

**SUPPORT LEVEL**

Staunton | Daikin | Heifetz | Staunton City Schools

**OTHER SUPPORT**

Dr. Leigh Frame '06

MARY BALDWIN UNIVERSITY

STAUNTON, VIRGINIA 24401