

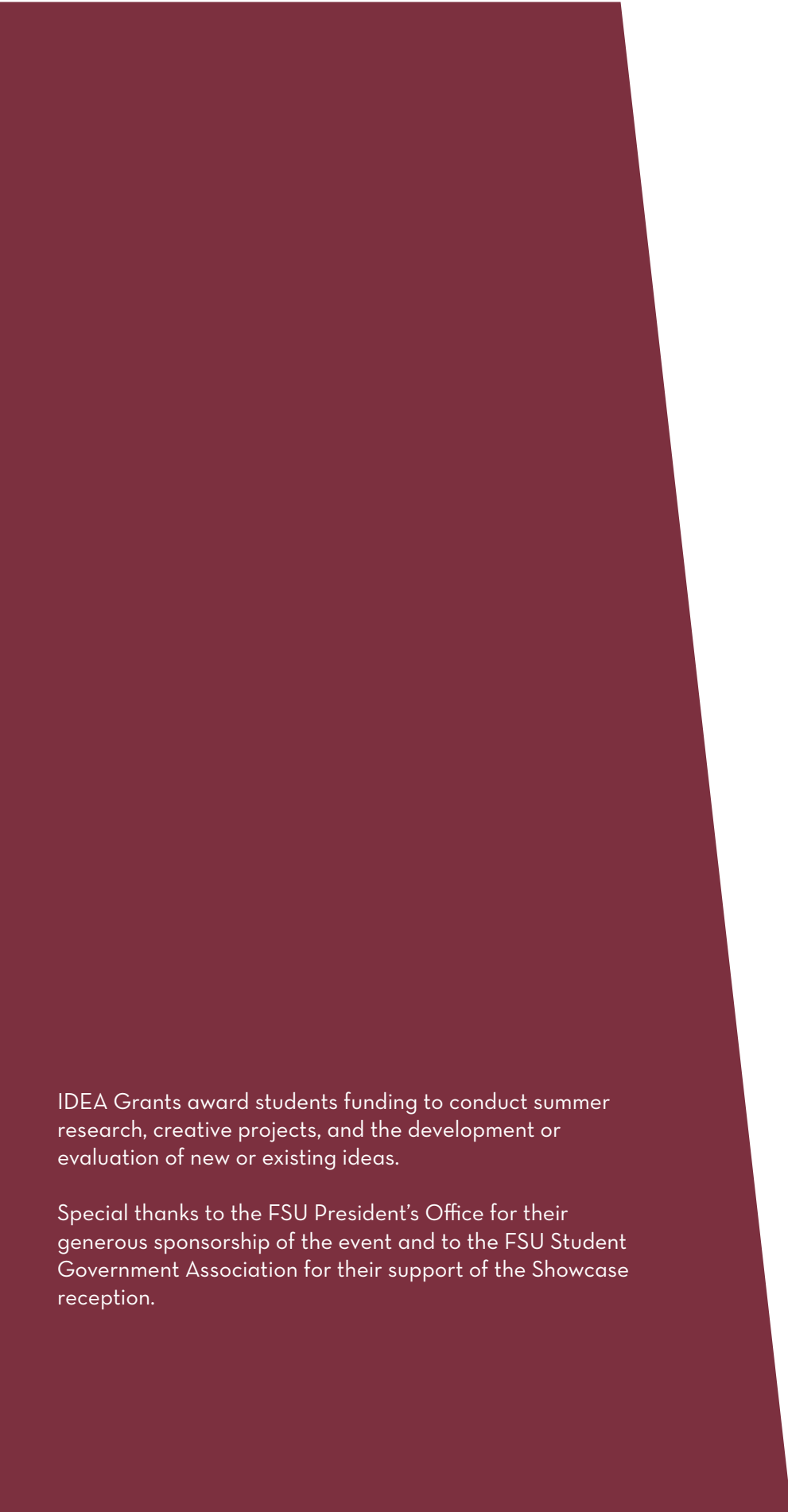

PRESIDENT'S SHOWCASE OF UNDERGRADUATE RESEARCH EXCELLENCE



Augustus B. Turnbull III • Florida State Conference Center

Division of
UNDERGRADUATE STUDIES
*Center for Undergraduate Research
and Academic Engagement*

Tuesday, September 27th
5:30pm-8:00pm



IDEA Grants award students funding to conduct summer research, creative projects, and the development or evaluation of new or existing ideas.

Special thanks to the FSU President's Office for their generous sponsorship of the event and to the FSU Student Government Association for their support of the Showcase reception.

WELCOME TO THE 2016 PRESIDENT'S SHOWCASE OF UNDERGRADUATE RESEARCH EXCELLENCE!



Latika L. Young, Ed. M.
Interim Director
Center for Undergraduate Research
and Academic Engagement

We are delighted that you could join us tonight in celebrating outstanding undergraduate research. The students who are presenting their projects have enhanced their undergraduate experience by taking on directed research and creative activity under the supervision and mentorship of some of Florida State University's most distinguished faculty.

Sponsored by the Center for Undergraduate Research and Academic Engagement (CRE), this event serves as the culmination of the IDEA Grant experience, but the work these students present tonight does not end here. Many of the awardees will continue their intellectual pursuits through honors theses, independent study projects, graduate research, and creative work, both here on our campus and beyond.

Please also join us tonight in recognizing David Ford, Jim Lee, John and Sally Day, Phil and Linda Lewis, Steve Madden, Scott and Ina McNichols, Dr. Mark S. Wrighton, Fred and Debbie Tresca, and Phi Eta Sigma for their continued financial support of our summer research awards. Our sincerest gratitude is also offered to FSU President John Thrasher for his office's generous sponsorship of the event, as well as to the FSU Student Government Association for their sponsorship of the reception. Of course, we also wish to thank all the faculty members who have volunteered their time and expertise to mentor these student researchers, as these efforts would not be possible without them.

If you're attending this event as a student, we hope you'll be inspired to develop your own research or creative projects. Applications for next year's awards are available at cre.fsu.edu.

PRESIDENT'S SHOWCASE OF UNDERGRADUATE RESEARCH EXCELLENCE

PRESENTATION SCHEDULE

5:30 PM

Ballroom, Room 208

OPENING REMARKS AND RECOGNITIONS

JOHN THRASHER, PRESIDENT
FLORIDA STATE UNIVERSITY

NATHAN MOLINA, PRESIDENT
FSU STUDENT GOVERNMENT
ASSOCIATION

DR. KAREN LAUGHLIN, DEAN
UNDERGRADUATE STUDIES

LATIKA YOUNG, INTERIM DIRECTOR
CENTER FOR UNDERGRADUATE
RESEARCH & ACADEMIC ENGAGEMENT

6:00-7:30 PM

Atrium and Walkways

POSTER PRESENTATIONS

6:00-7:15 PM

ORAL PRESENTATIONS

(SEE DETAILED SCHEDULE)

6:00-7:30 PM

Room 115

CREATIVE PRESENTATIONS

EXCERPTS OF CREATIVE WORKS
ONGOING - SEE SCHEDULE POSTED
OUTSIDE ROOM

7:30 PM

Dining Room 108

RECEPTION

ORAL PRESENTATIONS

6:10-6:25 PM

Room 103

ONNA BUGEISHA: WOMEN WARRIORS IN
THE BOSHIN WAR
ERIN TRUMBLE

6:10-6:25 PM

Room 114

MAGNETIC FIELD ALIGNMENT IN
SIMULATED MOLECULAR CLOUDS
COREY BRUMMEL-SMITH

6:10-6:25 PM

Room 201

WATER WAVES OVER TOPOGRAPHY:
NONLINEARITIES AND ROGUE EVENTS
TYLER BOLLES

6:10-6:25 PM

LAS PUERTAS DE MADRID: A LASTING IMPRESSION OF MADRID'S PAST AND PRESENT

VERONICA ERES

Room 205

7:00-7:15 PM

EBOLA CAMPAIGNS AND THE POLITICS OF PARTICIPATION IN GUINEA'S PUBLIC HEALTH MUSIC SCENE

MICHAEL RIVERA

Room 103

6:10-6:25 PM

CAMELS PASSING THROUGH NEEDLES: THE EFFECTS OF AGENT STATUS ON MORAL JUDGMENT

JACOB GOLDSTEIN-GREENWOOD

Room 214

7:00-7:15 PM

COST-EFFECTIVE ELISA FOR THE DETECTION OF HIV REACTIVATION

GAELE MARDY

Room 114

6:35-6:50 PM

IMPROVING DIABETES CARE THROUGH THE IDENTIFICATION OF INSULIN PUMP LEAKAGES VIA ADHESIVE BOUND COLOR CHANGE

JOHN WILCOX AND CELIA BONETT

Room 103

7:00-7:15 PM

3D MICROSCOPIC ANALYSIS OF THE MAIZE (ZEA MAYS L.) G-QUADRUPLEX-BINDING PROTEIN, ZMNDPK1

SAVANNAH SAVADEL

Room 201

6:35-6:50 PM

IONIC LIQUID ASSEMBLIES: STRUCTURES AND STABILITIES

HUNTER CARLOCK

Room 114

6:35-6:50 PM

WHAT IS FOOD?

CATHERINE DEBORAH DAVIDSON-HIERS

Room 201

6:35-6:50 PM

"LIVING IN LONG SHADOWS": REACTIONS IN NEW ORLEANS TO FRENCH EMANCIPATION, 1804-1876

TAYLOR KOCHER

Room 205



TYLER BOLLES is interested in mathematics in itself and all of its wonderful applications. He got involved with the Geophysical Fluid Dynamics Institute to explore the heavily mathematical science of fluid mechanics and specialized in water waves where he studies the effect of variable depth. He intends on attending graduate school to continue studying math. He is considering academics as well as some sort of industrial research, preferably in alternative energy such as nuclear fusion.



COREY BRUMMEL-SMITH is a senior Astrophysics major at Florida State University. In March of 2016, he began conducting research under Dr. David Collins in the Astrophysics department, analyzing data from numerical simulations of magnetized turbulence. The goal of Corey's research is to better understand how magnetic fields influence star formation. Upon graduation, Corey would like to go to graduate school to obtain a Ph.D. in Astrophysics. His future goal is to create computational simulations to test theories in astrophysics.



CELIA BONETT, studying Exercise Science with minors in Biology and Chemistry, is a third year student here at Florida State University. Her interest for medicine is driven by her passion for service and research, having completed numerous experiences ranging from international dental medical projects to on-campus diabetes research. Celia looks to continue her research involvement as an undergraduate student, hoping to complete an Honors Thesis based around the impact that diabetes has on dental health. Upon graduation, Celia plans to apply to dental school to acquire a DMD and begin practicing as a dentist for rural populations.



HUNTER CARLOCK is in his junior year of studying Computer Science at Florida State University. He has been conducting research under Dr. Christian Bleiholder with the Department of Chemistry. Upon graduation, Hunter would like to go to pursue graduate school in a STEM related field. His career goal is to go into the development of new technology.



CATHERINE DEBORAH DAVIDSON-HIERS is in her final year of Creative Writing and French and is working on a nonfiction essay collection under the umbrella theme of, "What is food?". Working with Dr. Marie-France Prosper of the Department of Modern Languages and Linguistics and Dr. Diane Roberts of the English Department, Catherine Deborah hopes to use her project to further the cultural understanding of how people are connected to their food, and through it, to each other. Upon graduation, she hopes to return to France to pursue research on this topic.



VERONICA ERES, a Tennessee native, is in her final year of studies in classical guitar performance under the tutelage of Professor Bruce Holzman. Veronica is currently working toward applying for a Fulbright fellowship to continue her studies at the Royal Conservatory of Brussels in Belgium, where she hopes to conduct a project on the presence of injuries among classical musicians. While working towards a career as a concert artist, she will continue finding ways to increase the functionality of classical music by studying connections between her favorite disciplines: music, culture, and history.



JEFF EDELSTEIN, a senior, will complete his degrees in Management Information Systems and Music this spring alongside his Honors Thesis. Since Fall 2014, he has researched the experiences of college students with autism under College of Education Associate Professor, Dr. Bradley E. Cox. In this time, Jeff has presented at two national conferences, helped secure a \$300,000 National Science Foundation Grant, and contributed towards the founding of the College Autism Network: a national not-for-profit organization. After graduating, Jeff hopes to pursue a Fulbright National Geographic Digital Storytelling Fellowship, followed by a Ph.D. in Higher Education and Student Affairs.



JACOB GOLDSTEIN-GREENWOOD, a Tallahassee native, is a sophomore majoring in Psychology. He has been conducting research under the supervision of Dr. Paul Conway, Assistant Professor of Social Psychology, since he began at Florida State. Broadly, Jacob studies moral psychology; his recent research interests have included the moral motivations of people who accept causing short-term harm in the service of the greater good, and the interplay of moral judgments of actions and moral judgments of persons. Jacob plans to continue studying the moral mind in graduate school before pursuing a career as a researcher and teacher.



TAYLOR KOCHER is in her final year as a History and Anthropology double major and is currently working on her Honors Thesis under Dr. Katherine Mooney in the Department of History. In addition to her passion for research, Taylor also enjoys teaching her fellow students as this is her second year as a Freshman Interest Group (FIG) Leader. Upon graduation, she will pursue a Ph.D. in History, focusing on nineteenth-century America, Southern history, and the history of slavery. Her ultimate goal is to continue performing research and fostering student involvement in history programs as a university professor.



MICHAEL RIVERA is from the small town of Dixon, Illinois and is finishing this year with dual degrees in Music and Biology and a certificate in Spanish medical interpreting. His research interests began as a freshman in the Undergraduate Research Opportunity Program (UROP), where he studied music theory education and dyscalculia with Dr. Jane Piper Clendinning. He is currently pursuing his Honors Thesis under the supervision of Dr. Joseph Hellweg. Michael hopes to receive a Fulbright grant after graduation to study Sufism and mental health in Morocco, and he ultimately seeks to one day strengthen global health systems as a physician and medical anthropologist.



GAELE MARDY, a second year Biochemistry major, has been a member of Dr. Jonathan Dennis' chromatin lab since the beginning of spring 2016. She plans on completing her Honors thesis and becoming UROP leader. Aside from research, she is also involved in Lady Spirithunter and the Center of Leadership and Social Change. Upon graduating, Gaelle plans on helping underserved communities as a physician or a medical researcher.



SAVANNAH SAVADEL is a third year Biological Science major from Sarasota, Florida. She has conducted research in Dr. Hank Bass' maize genetics laboratory since her freshman year. Savannah participated in the Undergraduate Research Opportunity Program (UROP) and she is excited to now be a UROP leader. She has obtained an NSF Undergraduate Research Assistantship and 2016 IDEA grant, and plans to begin her Honors Thesis in the Bass lab next semester. After graduation, Savannah would like to attend medical school to pursue a career as a physician and plans to continue research throughout her career.



ERIN TRUMBLE is in her final year at Florida State and is seeking a Dual Degree in History and Anthropology. Currently she is working on her Honors Thesis under Dr. Charles Upchurch and Dr. Kristina Buhrman. Upon graduation, she would like to continue her research on Japanese female warriors while obtaining a Ph.D. in Japanese History. Her ultimate career goal is to become a professor of history so she can continue to conduct research and help inspire a love of learning in others.



JOHN WILCOX, studying Biological Sciences with a minor in Chemistry, is entering into his third year at Florida State University. Having Type 1 Diabetes himself, John has been inspired to work within study programs that focus primarily on diabetes research since his first semester as an undergraduate. His continued interest within diabetes research leads him to pursue an Honors Thesis based upon his current research project funded by the IDEA Grant. After graduation, John plans to attend medical school and specialize in the practice of Pediatric Endocrinology to treat children who share with him similar endocrine disorders.



AUDREY WHEELER is entering her second year of studies in Political Science and Editing, Writing, and Media. During the last year she has worked as an undergraduate research assistant to Professor Irene Zanini-Cordi at the Department of Modern Languages and Linguistics. This summer's IDEA research will serve as the basis for her Honors in the Major thesis, where she will continue to explore the life of Caroline Crane Marsh. In the future she hopes to enter the field of political writing with a historical and human rights focus.

WATER WAVES OVER TOPOGRAPHY: NONLINEARITIES AND ROGUE EVENTS

TYLER BOLLES

David B. Ford Undergraduate Research and Creative Activity Award

SUPERVISING PROFESSOR: DR. NICK MOORE

Given a distribution of sea surface height, rogue waves are those fluctuations from the mean exceeding five standard deviations. The relative frequency of these anomalous events have captured researchers' interests for many years and there exists several proposed mechanics for how they are generated. Every mechanism is related by the common theme: instability. Here we investigate the role of a sudden depth change in rogue wave generation. We use the statistical parameters skewness and kurtosis to quantify changes in the sea surface distribution as a function of position. Our principle method of investigation is experimental, but we also present the results of the widely-used linear formulation of water waves and make direct comparisons of both our results to the results of fully nonlinear numerical simulations. We affirm the need for nonlinear simulations as well as the presence of heightened rogue probability due solely to a strong sudden depth change.

MAGNETIC FIELD ALIGNMENT IN SIMULATED MOLECULAR CLOUDS

COREY BRUMMEL-SMITH

SUPERVISING PROFESSOR: DR. DAVID C. COLLINS

We owe our entire existence to the Sun for providing us with a constant source of energy, and if we want to answer the questions, "Where did we come from?" and "Why are we here?" we need to understand how the Sun and other stars came into existence. This is an active area of astrophysical research. Astrophysicists have been working to understand how stars form and how magnetic fields influence their formation. Stars form in enormous clouds of molecular hydrogen, but the details are shrouded in mystery. In a conducting fluid, magnetic fields act like stiff wire to add structural integrity to a collapsing cloud. Magnetic fields are invisible to our telescopes and are therefore hard to measure. However, with the equations of magnetohydrodynamics, and the power of modern computers, we are able create simulations of star forming clouds with magnetic fields. I have been analyzing data from these types of simulations created by my professor, Dr. David C. Collins. Much of my research has involved writing computer programs to measure the effect of magnetic fields on the clouds seen by telescopes. In the first phase of my research I investigated the bending of magnetic fields at different length scales and how the bending varied with the strength of the field. In the next phase of my research, I measured what we call the dispersion function. More dispersion implies a weaker field. This gave us a better understanding of the fields than my previous efforts. After a wonderful summer of research I can say I have learned a great deal about data analysis, programming, and molecular clouds that stars form from. If and when we publish my results, it will certainly benefit other researchers on our quest to understand the role of magnetic fields in star formation.

IONIC LIQUID ASSEMBLIES: STRUCTURES AND STABILITIES

HUNTER CARLOCK

SUPERVISING PROFESSOR: DR. CHRISTIAN BLEIHOLDER

Ionic liquids are intensely investigated for their use in CO₂ reduction, electrostatic propulsion for micro satellites, and as energetic materials. Despite significant research efforts throughout the last decade, not much is known about the structures of clusters and ion pairs formed with ionic liquids. Trapped Ion Mobility Mass Spectrometry (TIMS-MS) can give us insight on how ionic liquids arrange in clusters and how ionic bonds are formed among ionic liquids. TIMS-MS works by electro-spraying ions through a tunnel with nitrogen gas providing positive gas velocity while exposing these ions to an electrical potential gradient as a retarding field before entering a Time-of-Flight Mass Spectrometer. As a result, molecular masses and cross sections of ionic liquids are determined. It is expected that determining ion pair structures and clusters of ionic liquids through TIMS-MS will enable their efficient use in spacecraft propulsion. In this project, I analyzed the ionic liquid 1-alkyl-3-methylimidazolium hexafluorophosphate through TIMS-MS and determined cross sections and cluster forming properties for this ionic liquid.

WHAT IS FOOD?

CATHERINE DEBORAH DAVIDSON-HIERS

SUPERVISING PROFESSOR: DR. MARIE-FRANCE PROSPER-CHARTIER

There is a connection forged, whether consciously or not, between people who share a meal. When traveling abroad, the cultural implications of this shared space cannot be ignored. So how does a country like France, whose cuisine is so admired by the United States as to verge on gastronomic mythology, view their own food? Traveling from Reignier-Esery in the Haute-Savoie region of France, to Chamonix, a mountain town situated in the shadow of Europe's tallest peak, and finally to Paris, I sought to answer this question through both direct and indirect examination of how people comport themselves in the presence of food, and how they are able to verbalize their relationship to it.

COLLEGE STUDENT SPECTRUM: ADDRESSING NEURODIVERSITY IN POSTSECONDARY EDUCATION THROUGH A VIRTUAL COMMUNITY FOR STUDENTS WITH AND WITHOUT AUTISM SPECTRUM DISORDERS (ASD)

JEFF A. EDELSTEIN

ACC Collaborative Award

SUPERVISING PROFESSOR: DR. BRADLEY E. COX

Although research dedicated to the study of autism spectrum disorders (ASD), those affected by ASD, and related conditions has grown exponentially over the past few decades, educators' understanding of these individuals' experiences in postsecondary education are still relatively basic. Existing research places emphasis on non-academic factors, as those with high functioning ASD may be well-suited for the academic rigor of college, but may encounter difficulties navigating the social requirements of college, especially in non-specialized institutions (i.e. those which serve students with and without development differences). While certain websites and similar support systems exist that are able to create a safe space for discussion among ASD individuals, there are few, if any, online resources oriented towards fostering communication and collaboration between those on the autism spectrum and those who are not. To this end, I piloted a website - CollegeStudentSpectrum.org - specifically geared towards serving students currently attending, graduated from, or planning to attend an institute of higher education, and who either identified as being on the autism spectrum, or were interested in this endeavor. After confirming support from both the Florida State University and Virginia Polytechnic Institute and State University Human Subjects Review Boards, and with support of a research assistant with high-functioning autism, individuals with and without ASD were recruited from both universities, as well as through the Autistic Self-Advocacy Network (ASAN), and several online forums. Responses from beta testers indicate a generally positive reaction to the website and its mission, with most requests and feedback focused on improved interactivity and community. To more effectively incorporate this feedback in preparation for the website's public release later this year, several participants who have expressed interest in becoming a part of the College Student Spectrum team will continue assisting with the development of the website over the coming months.

LAS PUERTAS DE MADRID: A LASTING IMPRESSION OF MADRID'S PAST AND PRESENT

VERONICA ERES

SUPERVISING PROFESSOR:
PROFESSOR BRUCE HOLZMAN

Spain has long been recognized for the controversy between the monarchy and non-Catholic immigrants, which was revived in the 20th century with the dictatorship of Francisco Franco. Franco was notorious for his unwavering attempts to bring Spain back to its Golden Age; however, the regime was unable and unwilling to take steps toward controlling the colorful musical influences that had lasted even through the Inquisition, despite many efforts to expunge them. The promise of employment at the royal palace drew Spaniards to Madrid from all over the country, bringing with them Andalusian, Catalan, and Basque influences, among others. Federico Moreno-Torroba thrived as a composer during this time, while many dictatorships across Europe imposed regulations upon their artistic products. This project was a thorough investigation of Torroba's music and its relation to Spain's multifaceted culture, changing political temperaments, and the inspiring architecture of the great capital, as evidenced by his work for solo guitar, *Las Puertas de Madrid*. The project had three components: musical, cultural, and academic. To address the musical component, I collaborated with members of the Royal Conservatory, gathered information about the varying musical styles that make up Madrid's culture, and attended live performances. The cultural component was explored through interviews with madrileños, language classes, and visits to the surviving monuments. For the academic portion, I spent several days in the Basque region visiting Torroba's son, during which time I conducted lengthy interviews on his father's relationship to the political periods throughout his life and his reasons for composing *Las Puertas*. My conclusions explore the reasons for the backwardness of events in 20th century Spain, their effects on its people, and the fire behind Spanish music.

CAMELS PASSING THROUGH NEEDLES: THE EFFECTS OF AGENT STATUS ON MORAL JUDGEMENT

JACOB GOLDSTEIN-GREENWOOD

SUPERVISING PROFESSOR: DR. PAUL CONWAY

Traditional descriptive theories of moral judgment have primarily focused on actions as the unit of moral evaluation. However, a growing canon of evidence suggests that moral judgments are infused with a diverse set of concerns and motivations that range far beyond simple evaluations of actions as right or wrong, and that the traditional conception of human moral judgment as purely act-focused is wholly insufficient to explain the diversity and inconsistency of moral opinion that we find in the world. Some of this research has coalesced into a theory of "person-centered morality." Per this theory, inferences as to the whole moral character of a person committing an action can serve to sharpen or soften final moral evaluations of the action itself. Such a theory helps explain why two people who commit an action identical in both its nature and its consequences can be judged differently: if one is perceived to have worse moral character than the other, then the severity of the act-judgment would be expected to vary in accordance with that perception of moral character. In the present work, we assess whether the social status of agents committing potentially immoral actions serves to influence moral judgments in this way. We first analyze the patterns of variation in moral judgments of actions committed by high- and low-status agents; we then attempt to explain this variation via the mechanism proposed by person-centered morality: namely, that different inferences of moral character are being drawn about each group of agents.

**“LIVING IN LONG SHADOWS”: REACTIONS IN
NEW ORLEANS TO FRENCH EMANCIPATION,
1804-1876**

TAYLOR KOCHER

SUPERVISING PROFESSOR: DR. KATHERINE MOONEY

Nineteenth-century America is often reduced in the majority of people’s minds to little more than the Civil War, glossing over one of the most transformative periods in American history. Cities and communities nationwide, though particularly those in the South which relied the most on slave labor and the slave trade, saw recurrent conflict and revolt for decades before and after the war. New Orleans, a city heavily dependent upon the institution of slavery, is unique as it was affected by tensions rising not only in the United States, but elsewhere in the world. Newspapers served as a major source of information throughout this time period, and Louisianans’ reactions (or in some cases, the lack of a reaction) to pivotal events in the history of slavery and emancipation speaks volumes. This project examines the responses of New Orleanians to Southern slave revolts and the tumultuous emancipation of French colonial slaves in the nineteenth century through the analysis of newspaper reports and personal accounts. To better understand these reactions, it is critical to recognize the dramatic effects the slave rebellion in the former French colony of Saint-Domingue from 1791 to 1804 had on the residents of New Orleans, a city ripe with French influence long after it was acquired by the United States through the Louisiana Purchase. This project serves as a way for historians to connect Caribbean, European, and American history through the happenings in one location and reflect Southern opinions on the Atlantic world from the Haitian Revolution to Reconstruction. The paranoia-ridden Southern mindset, constantly overshadowed by the fear of similar slave rebellions to those in Haiti and the result of conflicting opinions on systems of human bondage, greatly influenced the development of not only Louisiana but the rest of the United States.

**COST-EFFECTIVE ELISA FOR THE DETECTION
OF HIV REACTIVATION**

GAELE MARDY

SUPERVISING PROFESSOR: DR. JONATHAN DENNIS

DNA is a negatively-charged molecule that wraps around a positively charged protein called a histone. The wrapping of DNA and histones is a chromatin component called a nucleosome. The relationship between the organization of chromatin and diseases such as human immunodeficiency virus is largely unknown. An interesting aspect of HIV is its ability to remain undetected during latency. Large scale studies on how the human genome responds to reactivation of the latent reservoir of HIV is needed for better understanding the disease. The ELISA (Enzyme-linked immunosorbent Assay), a lab technique to detect HIV reactivation, is an expensive test, and latency of HIV obstructs research regarding of genomic response. The plausible solution is the development of a cost-effective ELISA for detecting HIV reactivation, allowing for studies on chromatin structure and HIV.

EBOLA CAMPAIGNS AND THE POLITICS OF PARTICIPATION IN GUINEA'S PUBLIC HEALTH MUSIC SCENE

MICHAEL PEREZ RIVERA

Scott and Ina McNichols Undergraduate Research Award

SUPERVISING PROFESSOR: DR. JOSEPH HELLWEG

Throughout the 2014 Ebola outbreak in West Africa, local musicians composed and performed music to combat fear, mistrust, and misinformation surrounding the epidemic. In Guinea, many artists participated in Ebola music campaigns, either through independent projects or those funded by the government or non-governmental organizations (NGOs). When musicians are sponsored by these Western-based NGOs, their creative processes become entangled with larger development agendas, many of which implement neoliberal capitalist ideologies rooted in globalization and neocolonialism (Morin 2012; Pier 2015). I argue that in spite of the financial opportunities presented by Western aid projects, local independent initiatives demonstrate self-efficacy while promoting community bonding and traditional arts. Drawing on observation of music making in concerts and gatherings, as well as semi-structured interviews with musicians and production team members, I deconstruct how these artists responded to the Ebola crisis while seeking to preserve their sociocultural identities in an increasingly globalized world.

3D MICROSCOPIC ANALYSIS OF THE MAIZE (ZEA MAYS L.) G-QUADRUPLEX-BINDING PROTEIN, ZMNDPK1

SAVANNAH SAVADEL

SUPERVISING PROFESSOR: DR. HANK W. BASS

NDPK (nucleoside diphosphate kinase) is a member of a family of enzymes with diverse cellular roles in development, proliferation, stress, and metabolism. G4 elements are linked to genes associated with tumor growth in humans and stress response genes in maize (Andorf et al., 2014). Work from FSU identified ZmNDPK1 as the first known plant G4-DNA-binding protein (Kopylov, Bass, & Stroupe, Biochem, 2015). Drs. Stroupe and Bass produced antibodies to ZmNDPK1 in order to learn more about its possible role in G4 DNA binding and stress response in the model genetic organism, maize. I have used this antibody to examine the cellular localization of ZmNDPK1 using 3D deconvolution fluorescence microscopy within maize cells from control and treated (hypoxia/low oxygen or high glucose) maize tissues. Maize root tip and seed tissue endosperm were selected for experimental reasons and because of intriguing staining patterns I observed from earlier pilot studies. Treated root tips for the summer project were acquired from collaborators (Sanclemente & Koch, Univ. Florida). We found strong auto-fluorescence in several imaging wavelengths which confounded the interpretation of true antibody signals. In addition, staining deep into the tissue diminished, suggestive of a problem of antibody penetration into the tissue sections. These issues led to possible false positives and false negatives, complicating the analysis. Photobleaching of tissues was employed in order to reduce auto-fluorescence. For antibody penetration, I co-stained cells with an antibody for tubulin as a positive control. By focusing on antibody-accessible cells in photobleached samples, some promising results were acquired and will be presented. These procedural improvements, along with possible use of a fluorescent protein-tagged version of NDPK may be used in the future to more fully characterize the dynamic localization of ZmNDPK1 in maize cells under natural (endosperm) or experimentally induced (root tip) hypoxia exposure.

ONNA BUGEISHA: WOMEN WARRIORS IN THE BOSHIN WAR**ERIN TRUMBLE**

Michael J. Shaara Undergraduate Research and Creative Activity Award

SUPERVISING PROFESSOR: DR. KRISTINA BUHRMAN

The West has often misinterpreted the role of women in 19th-century Japan. While late Tokugawa society and laws put women under the control of men, women of the samurai class were commonly taught how to wield weapons and defend their homes. Nowhere was this more visible than in the Battle of Aizu Wakamatsu during the Boshin War where women were very active in the fighting. This study hopes to understand the culture around these women at the time of the battle, and also look at how they are understood today. To investigate this, I have gathered and read secondary sources regarding women in Japan and their role among warriors. In addition, I traveled to Japan to find primary sources and to visit sites pertinent to the battle, such as the Tsurugajo Castle in Aizu Wakamatsu. I have also begun reading the translation of the memoirs of one of the women who fought at Aizu, Yamamoto Yaeko. To learn how these women and their role in the battle are remembered, I examined how they appear in popular culture. My research demonstrates that it was fairly common for women of the samurai class to learn martial arts; however, it was less common that they would participate in actual battles and the women of Aizu appear to be the exception to the rule. The only one of the Aizu women that appears prominently in popular culture is Yamamoto Yaeko, and this is likely due to her extensive memoirs, which makes her life easier to dramatize. This may also be because she lived a long life that is more easily romanticized than those of the women who died on the battlefield.

CAROLINE CRANE MARSH: AN AMERICAN'S ACCOUNT FROM 1860S ITALY**AUDREY WHEELER**

SUPERVISING PROFESSOR: DR. IRENE ZANINI-CORDI

Caroline Crane Marsh: An American's Account from 1860s Italy is a ten-week investigation from the summer of 2016 into a unique and relatively unknown perspective of both Italian and American culture. Living in Italy throughout the second half of the nineteenth century, Caroline Marsh traveled with her husband George Perkins Marsh, the first American ambassador to the kingdom of Italy, to spend two decades immersed in the upper levels of Italian politics and society. She scribed many letters and compiled a number of diaries that candidly depict aspects of the Civil War, Italian Risorgimento, social experiences, and a variety of other events throughout her chronological commentary; in addition to these she also repeatedly submerged herself into literary forays. Despite the incredible value of these firsthand records, Marsh's life's work was essentially overshadowed by that of her husband's and she is even further absent from history due to her physical disabilities. Through digitally scanning and transcribing a portion of her works (located at the University of Vermont's Bailey/Howe Library and the Biblioteca Nazionale Centrale di Firenze), I am assembling a fairly comprehensive collection of her life as a historian, feminist, traveler, and writer. Her invaluable and previously unstudied writings form the basis of my exploration into the importance of her work and the capabilities it has for providing new historically significant material. From this compilation, I am working to publish her writings so they will become accessible on a broad scale for all scholars.

IMPROVING DIABETES CARE THROUGH THE IDENTIFICATION OF INSULIN PUMP LEAKAGES VIA ADHESIVE BOUND COLOR CHANGE

JOHN WILCOX AND CELIA BONETT

Helen Louise Lee Undergraduate Research Award

SUPERVISING PROFESSORS: DR. IGOR ALABUGIN AND DR. JUSTIN KENNEMUR

Insulin pump technology is a commonly implemented form of treatment for patients who suffer complications from diabetes mellitus. Routine bolus and basal deliveries of insulin via sustained subcutaneous injection allow for insulin pump users to avoid episodes of hyperglycemia and promote the regulation of homeostatic blood glucose levels. Certain issues can arise within insulin pump therapy, primarily through mechanical malfunctions associated with the infusion site of the cannula into localized regions of the body. Occurrences involving cannula dislodgment, lipohypertrophy and internal pump occlusions can result in the leakage of insulin concentrations from the infusion site onto adhesive material surrounding the cannula during bolus and basal deliveries. The aim of this study was to identify a practical method of insulin leakage detection that could be utilized to notify insulin pumps users if a leak was occurring, thus allowing users to replace their insulin pump and prevent substantial alterations in blood glucose levels. Due to the clear appearance of insulin concentrations used within insulin pumps, it is often difficult for users to recognize if insulin has leaked during the initiation of an insulin dosage. Utilizing a homogenous mixture of 4-aminoantipyrine and potassium persulfate, we were able to target preservatives within insulin concentrations for color change to visualize the event of an insulin leakage. With the colorimetric recognition of insulin leakages having been obtained, we proceeded to combine the identified chemicals into varying polymers through a drop casting procedure. Data relating to the optimal combination of concentrations of color changing chemicals and absorbent polymers were obtained. The study's initiative to develop a universal polymer, fully integrated with an insulin indicator, allows for a potential technique that could be applied to all types of insulin pump devices for future insulin leakage detection.

PRINTING OUR FEELINGS: FACIAL REPLACEMENT ANIMATION

GABRIELLE ARNOLD

SUPERVISING PROFESSOR: DR. ANDREW SYDER

Gabrielle Arnold is a Fine Arts major with a focus in Time Based Media. Her passion lies in stop motion animation and miniature composition. Her work has been featured in galleries like the Dali Museum in St. Petersburg, Florida and the Morean Institute for Art. Her love for contemporary art and primitive method establishes pieces which call to a broad audience. She is intrigued by a personal and almost intrinsic narrative expressed through experimentalism and form, which she hopes to bring into her professional life as an animator and miniature fabrication artist.

MUD ANGELS RECOVERED: FSU'S FIRST YEAR IN FLORENCE

BREANNA BRUNER

John W. Day III Undergraduate Research Award

SUPERVISING PROFESSOR: DR. JACK FREIBERG

Breanna Bruner, a Tallahassee native, is beginning her senior year at Florida State as a double major in Art History and Digital Media Production. She came across the idea for her research project while working alongside Jean Hudson and Jack Freiberg in FSU's Art History Department as a videographer. She has since returned from studying in Florence for the summer. She hopes to continue her educational career with more documentary-based research.

A PROXY INTEGRATED KINETIC ENERGY FOR TROPICAL CYCLONES

SEAN BUCHANAN

SUPERVISING PROFESSOR: DR. VASUBANDHU MISRA

Sean Buchanan, a Tallahassee native, is a senior in the Meteorology Program in the Department of Earth, Ocean, and Atmospheric Science. This past summer, Sean attended the National Center of Atmospheric Research's prestigious Undergraduate Leadership Workshop program while conducting research under the guidance of Dr. Vasubandhu Misra at the Center of Ocean-Atmospheric Prediction Studies. He plans to go to graduate school for either Meteorology or Physical Oceanography to further improve our understanding in geophysical fluid dynamics and how it impacts climate.

SOME THEORY AND AN APPLICATION OF DYNAMICS OF FITZHUGH-NAGUMO NEURON NETWORKS

VALERIE BULLOCK

SUPERVISING PROFESSOR: DR. XIAOMING WANG

Valerie Bullock, a Tallahassee native, begins her senior year in Applied Mathematics following summer research with Dr. Xiaoming Wang, Chair, Mathematics. She intends to complete a Ph.D. in Applied Mathematics and research the dynamics between neurons and astrocytes, and the role they play in information processing and neurological diseases. She hopes to work as a university professor or in a research lab to advance the embryonic field of mathematical dynamics between glia and neurons. She appreciates guidance from many FSU faculty members and is especially grateful to Dr. Nathan Kutz, University of Washington Applied Mathematics, for his generous Summer 2016 mentoring.

POSTER PRESENTER BIOS

FACTORS OF SUCCESSFUL INTEGRATIONS OF REFUGEES IN JACKSONVILLE, FLORIDA

MOLLY CONRAD

Fred and Debbie Tresca Global Scholars IDEA Grant

SUPERVISING PROFESSORS: PROFESSOR MARK SCHLAKMAN, J.D. AND MELANIE A. HOM, M.S.

Molly Conrad is in her final year of International Affairs and Middle Eastern Studies and is currently working on her Honors Thesis. Upon graduation, Molly would like to continue research on human rights, domestically or internationally. She would also like to obtain her Juris Doctor degree studying international human rights law and national security law, and pursue a career in those fields.

THE RISK IN THE STUDENT LOANS ASSET-BACKED SECURITIES MARKET: LESSONS FROM THE 2008 MELTDOWN

DANIEL DUQUE

SUPERVISING PROFESSOR: DR. DONALD AUTORE

Daniel is majoring in Finance and Management Information Systems and will be graduating in May 2017. Outside of class, he is working on his Honors in the Major and is an undergraduate consultant for the FSU Consulting Group. He is also a former researcher for the Undergraduate Research Opportunity Program. In the future, he hopes to work in real estate either as a broker or a developer.

ROLE OF TP63 GENE IN THE PREMATURE AGING DISEASE PROGERIA

TYLER FELLS

SUPERVISING PROFESSOR: DR. DAVID M. GILBERT

Tyler Fells, a pre-dental student, is in her third year of Exercise Physiology and is currently working towards graduating a semester early. Since the beginning of the summer, she has been conducting research under Dr. David M. Gilbert in the biological science department. Before graduation, Tyler would like to continue research in the biological science department under Dr. Gilbert, and possibly get her name published in a scientific article. Her career goal is to graduate from dental school and obtain her own practice.

PRINTING OUR FEELINGS: FACIAL REPLACEMENT ANIMATION

GRAYSON GOGA

SUPERVISING PROFESSOR: DR. ANDREW SYDER

Grayson Goga is a junior studying animation and digital arts at the College of Motion Picture Arts. After university, Grayson plans to write and direct careful independent films for as long as he can.

THE EROTIC, MATERNAL, AND WARLIKE AGENCY OF WOMEN IN THE BYZANTINE AND SLAVIC EPIC

RAVITAL GOLDFOF

SUPERVISING PROFESSOR: DR. ROBERT ROMANCHUK

Ravital Goldgof is a sophomore at Florida State University. Her participation in the Undergraduate Research Opportunity Program (UROP) led to her current linguistics project on the agency of female characters in the Byzantine and Slavic epic Digenis Akritis. After completing her degree in Political Science with a minor in French, she plans to pursue a law degree, focusing on international law.

NITROGEN BUDGET OF THE GULF OF MEXICO

ANNA HAYWARD

SUPERVISING PROFESSOR: DR. ANGELA KNAPP

Anna Hayward, a resident of St. Augustine, grew up a Florida beach girl and has always had a love for the ocean. She decided to pursue this passion through her research under Dr. Knapp in the chemical oceanography department. She is currently a senior earning her Biochemistry degree, is an active volunteer in the community and plans to attend medical school upon graduation. While she would like to pursue a career in medical research, she still plans to remain active with various conservation groups in order to protect the oceans she calls home.

THE POTENTIAL APPLICATION OF NORDIC PENOLOGY ON AMERICAN CORRECTIONS

ALYSSA KNISLEY

SUPERVISING PROFESSOR: PROFESSOR DANIEL MAIER-KATKIN, J.D.

Alyssa Knisley is a senior pursuing a degree in Criminology and Psychology with a minor in Social Welfare. She previously served as the Editor-in-Chief of the university's undergraduate research journal and has since been conducting research on penology for her Honors in the Major thesis under the guidance of Professor Daniel Maier-Katkin in the College of Criminology. Upon graduation, Alyssa is interested in exploring new avenues of research in international criminology and ultimately strives for a career in public service and policymaking.

DON'T BREAK THE SILENCE: PAINTING THE FLESH

MENIKA LUE

SUPERVISING PROFESSOR: PROFESSOR CARRIE ANN BAADE, M.F.A.

Menika Lue is in her final year of the Bachelor of Fine Arts program. She is currently working on her Honors in the Major and graduating thesis project. Menika has been doing research on the medical experimentation on Blacks in America. She will continue to create self-prompted, research-based art and will pursue a Master of Fine Arts degree.

GOODBYES AREN'T ALWAYS DIFFICULT: IMPLEMENTATION OF LEAVING GROUPS IN SELECTIVE RADICAL CYCLIZATIONS

MICHELLE LY

Dr. Jack Saltiel Undergraduate Research Award

SUPERVISING PROFESSOR: DR. IGOR ALABUGIN

Michelle is a Florida native who is in her final year at Florida State University. She is pursuing her B.Sc. in Biological Science, with minors in Chemistry and Psychology. She first began research in the Alabugin group as part of a laboratory class in her freshman year, and has been involved in the group ever since then. She plans to eventually attend medical school and practice as a family doctor.

SUSTAINABLE CONCRETE

KEVIN MATHEUS

SUPERVISING PROFESSOR: DR. RAPHAEL KAMPMANN

Kevin Matheus, a current senior-level civil engineering student, hopes to someday contribute to the design and management of engineering projects in different parts of the world. The Boca Raton local devoted two scholastic years to FSU's athletic program and one to the ACE Learning Center as a math tutor. Following his sophomore year Kevin launched, IStructE, a student organization for students interested in structural engineering at the FAMU-FSU College of Engineering. He is thrilled to have conducted concrete research under Dr. Raphael Kampmann because it has broadened his perspective of the civil engineering field.

DANCE/MOVEMENT THERAPY: USING THE BODY AS A VEHICLE TO MINDFUL, HEALTHY LIVING

KAYLA MCCLELLAN

SUPERVISING PROFESSOR: DR. HANNAH SCHWADRON

Kayla McClellan is an aspiring contemporary dancer/choreographer acquiring a BFA in Dance. She is striving to bridge the gap between "performer" and "audience member" and promoting physical and cultural growth through research in Dance Sciences and Dance/Movement Therapy. Kayla is participating in the School of Dance's fall program FSU/NYC during her senior year. While in New York, she is interning with Dance/NYC, specifically their Disabilities Initiative. The internship segues perfectly into the rest of her career as she wishes to make dance more inclusive and continue exploring its benefits for the mind, body, and soul.

SUSTAINABLE CONCRETE

KATHLEEN MCCLENAHAN

SUPERVISING PROFESSOR: DR. RAPHAEL KAMPMANN

Kathleen McClenahan, a senior civil engineering student, is hoping to go into the construction field upon graduation. Her desire is to find ways to combine her love for mathematics with her passion for people. Eventually, she hopes to work in the humanitarian sector, developing solutions for efficient and sustainable housing.

POSTER PRESENTER BIOS

SOCIOCULTURAL ELEMENTS OF MODERN DAY SLAVERY WITHIN GORUBATHAN, WEST BENGAL

SAVANNAH MILLER

Fred and Debbie Tresca Global Scholars IDEA Grant

SUPERVISING PROFESSOR: DR. KRISTIN DOWELL

Savannah Miller, a resident of Bonifay, is in her final year of Anthropological Studies. As a Global Scholars intern, she investigated the sociocultural aspects of human trafficking in a rural village of West Bengal, India. She is currently working on her Honors Thesis discussing the influence of gender on education inequalities. Combining her love of culture with her passion for filmmaking, she utilizes ethnographic films to bring life to her research. After graduation, she would like to continue research in the field of development and human rights while obtaining a Ph.D in Cultural Anthropology. Her ultimate career goal is to become a professor, so she can stress the importance of cultural relativism to the next generation.

EXAMINING RURAL AND URBAN GENDER-BASED UTILIZATION INEQUALITIES

GERMAN MONTERO

Fred and Debbie Tresca Global Scholars IDEA Grant

SUPERVISING PROFESSOR: DR. DANIEL VAN DURME

German Montero, in his final year of studies in Biochemistry, has maintained a diverse array of involvement opportunities at FSU, ranging from research assistantships with the late Sir Harold Kroto and a Mag Lab REU, in addition to serving as an FSU Housing Resident Assistant in three separate halls throughout campus, being a UROP leader, Global Scholar, and serving as a Teaching Assistant for Organic Chemistry labs. Upon graduation, German aspires to pursue a career in medicine with an emphasis on global public health.

DISTINGUISHING UNDERLYING ASSOCIATIONS BETWEEN ORTHOREXIA NERVOSA, OBSESSIVE-COMPULSIVE DISORDER, AND EATING DISORDERS

GABRIELA MUNOZ

SUPERVISING PROFESSOR: DR. THOMAS JOINER

Gabriela Munoz is a Mark A. Berkley Undergraduate Research Endowment recipient finishing her final semester at Florida State University. She is currently pursuing a B.S. in Psychology and intends to pursue a Ph.D. in the same field. Since 2015, Gabriela has been involved in Dr. Thomas Joiner's lab under the mentorship of Ph.D. student Megan Rogers. Gabriela was born in Chile to Colombian and Peruvian parents and calls South Florida home.

MAPPING THE MINIMAL DOMAIN OF KSHV ORF45 FOR ACTIVATION OF RSK & ERK

BENJAMIN PIFER

Steve Madden Undergraduate Research Award

SUPERVISING PROFESSOR: DR. FANXIU ZHU

Benjamin Pifer, of Toledo, Ohio, is currently entering his junior year at Florida State. He is pursuing a Biology degree with a pre-med track. He has been researching under Dr. Fanxiu Zhu for two years, studying protein interactions involving Kaposi sarcoma-associated herpesvirus. Upon graduation, Benjamin hopes to attend medical school at the University of Michigan. He wishes to specialize in immunology or pathology so that he can remain involved in research as well as practice medicine.

ARTEMISIA, ARTEMIS, ART: THE LIFE OF ARTEMISIA GENTILESCHI

KAITLIN RIZZO

Phi Eta Sigma Undergraduate Research Award

SUPERVISING PROFESSOR: DR. ERIN BELIEU

Kaitlin Rizzo spent the past summer in England and Italy, courting the ghost of 17th century's most successful female painter: Artemisia Gentileschi. Fueling her Honors Thesis—a poetry collection confronting the sexual assault Artemisia faced, the nature of art, and the narrative of the self as told through Artemisia's paintings— Kaitlin hopes to forge a connection between past and present. Upon graduating, Kaitlin aims to continue this project in a post-graduate program in England.

DEVELOPING LEARNING PARADIGMS IN APLYSIA CALIFORNICA TO HELP UNDERSTAND CIRCADIAN RHYTHMS IN MEMORY FORMATION

VALENTINA NATALIE SARACINO

SUPERVISING PROFESSOR: DR. LISA LYONS

Valentina Saracino, a Psychology and Biology double major, is in her final year of undergraduate education and is currently working on her Honors Thesis. Since last year, she has been researching under Dr. Lisa Lyons in the Program of Neuroscience. Upon graduation, Valentina plans to attend medical school, and conduct clinical research while pursuing a medical degree. Her career goal is to become a practicing physician while actively continuing research.

THE DETRIMENTAL EFFECTS OF DIET-INDUCED OBESITY ON OLFACTORY PERFORMANCE AND FUNCTION

NICHOLAS SCHREITER

Phi Eta Sigma Undergraduate Research Award

SUPERVISING PROFESSOR: DR. DEBRA ANN FADOOLO

Nicholas Schreiter is a Wisconsin native in his third year as a Biological Science student. He is currently working on his Honors Thesis, in addition to completing a teaching assistantship for General Biology Laboratory. Since the fall of last year, he has been conducting research under the guidance of Dr. Debra Ann Fadool in the Department of Biological Science. After graduation, Nicholas plans on attending medical school where he hopes to gain experience in neurosurgical research. His career goals are to practice neurosurgery, with a specialization in endovascular interventions, and to conduct research in vascular neurology.

THE EROTIC, MATERNAL, AND WARLIKE AGENCY OF WOMEN IN THE BYZANTINE AND SLAVIC EPIC

LILY SHELTON

SUPERVISING PROFESSOR: DR. ROBERT ROMANCHUK

Lily Shelton is a second-year undergraduate student studying English Literature. She has been conducting research with Prof. Robert Romanchuk at the Department of Modern Languages and Linguistics since August 2015.

POSTER PRESENTER BIOS

EFFECTS OF INSECT DAMAGE TO ASPEN SUNFLOWERS ON POLLINATOR VISITATION

KYLE SPELLS

SUPERVISING PROFESSORS: DR. BRIAN INOUE,
DR. NORA UNDERWOOD

Kyle Spells is in his last semester as a Biology and Environmental Science double major and is currently working on an independent project. Kyle has been working with Dr. Brian Inouye and Dr. Nora Underwood since Spring 2015, and has since completed an Honors Thesis with them. Upon graduating, Kyle would like to strengthen his research experience, seeking employment working with various biological systems abroad. Thereafter, Kyle would like to continue in academia, eventually receiving his Ph.D. in Biology where he would one day work as a professor at a university.

NICKEL IN THE HAYSTACK: IDENTIFYING STABLE NICKEL IN THE TRANSITIONAL PHASE OF TYPE 1A SN

AODHAN SWEENEY

SUPERVISING PROFESSOR: DR. ERIC HSAIO

Aodhan Sweeney is a sophomore studying Physics and Astrophysics and is a member of the university Honors Program. For the past 3 semesters he has been engaged in undergraduate research alongside Dr. Hsiao of the Florida State University's Department of Physics. Looking forward, he would like to continue his research with Dr. Hsiao, and eventually secure his own Ph.D. so that being at the forefront of discoveries in Cosmology and Astronomy can be his career.

STICKY RICE AND FISH SAUCE: UNDERSTANDING NUTRITION IN THAILAND

ASHLEY WARD

Fred and Debbie Tresca Global Scholars IDEA Grant

SUPERVISING PROFESSOR: DR. MARIA SPICER

Ashley Ward is currently a senior pursuing her bachelor's degree in Food and Nutrition Science. As a Global Scholar she spent the summer working with a non-profit organization in northern Thailand. Ashley worked on a public health program and also conducted a research project looking at the dietary quality of members within local villages. Upon graduating, she plans on attending medical school and would like to practice medicine using dietary and lifestyle intervention when applicable. Her background in nutrition will lay the foundation for this work.

MAPPING THE MINIMAL DOMAIN OF KSHV ORF45 FOR ACTIVATION OF RSK & ERK

HUNTER WILLIAMS

Steve Madden Undergraduate Research Award

SUPERVISING PROFESSOR: DR. FANXIU ZHU

Hunter Williams, a Maryland resident, is in his final year of Biological Sciences and currently applying to graduate school. For the past two and a half years, he has been conducting research under Dr. Fanxiu Zhu studying the oncovirus, Kaposi's sarcoma-associated herpesvirus (KSHV). Upon graduation, Hunter would like to obtain a master's degree in Cardiovascular Sciences, then continue to medical school. His career goal is to specialize as a cardiologist or cardio-thoracic surgeon.



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