

# 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*

Monday, September 28th  
5:30pm-8:00pm



The Undergraduate Research and Creative Activity Awards (URCAA) and the Mentored Research and Creative Endeavors Awards (MRCE) award students funding to conduct a summer research project or creative activity under the direction of a faculty mentor.

The Public Service Research Fellowships (PSRF), awarded for research or creative projects conducted in partnership with a community-based organization, are partially funded through support from The Atlantic Coast Conference.

The Social Work Undergraduate Research and Creative Activity Award (SWURCAA) is funded by the FSU College of Social Work.

The ACC Collaborative Summer Research Award offers one undergraduate student the opportunity to travel and conduct research under the mentorship of a faculty member at another ACC University, and the award's aim is to improve collaboration between ACC institutions.

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 2015 PRESIDENT'S SHOWCASE OF UNDERGRADUATE RESEARCH EXCELLENCE!



Joe O'Shea, Ph.D.  
*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 Summer Research Award 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.



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

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, 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](http://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

JEAN P. TABARES, PRESIDENT  
FSU STUDENT GOVERNMENT ASSOCIATION

DR. KAREN LAUGHLIN, DEAN  
UNDERGRADUATE STUDIES

DR. JOE O'SHEA, DIRECTOR  
CENTER FOR UNDERGRADUATE RESEARCH &  
ACADEMIC ENGAGEMENT

**6:00-7:30 PM** **Atrium and Walkways**

POSTER PRESENTATIONS

**6:10-7:40 PM**

ORAL PRESENTATIONS  
(SEE DETAILED SCHEDULE)

**7:30 PM** **Dining Room 108**

RECEPTION

ORAL PRESENTATIONS

**6:10-6:25 PM** **Room 103**

COCAINE'S EFFECT ON  
THE HUMAN GENOME  
COLE FRIEDES

**6:10-6:25 PM** **Room 114**

THE EDELWEISS PIRATES: DELINQUENCY  
AND RESISTANCE IN NAZI GERMANY  
RYAN REILLY

**6:10-6:25 PM** **Room 201**

NUMBER OF DEPLOYMENTS AND THE  
INTERPERSONAL THEORY OF SUICIDE  
DANIEL HUBBARD

**6:10-6:25 PM** **Room 205**

MUSIC EDUCATION AND SOCIAL WORK: A  
CASE STUDY OF THE GURI SANTA MARCELINA  
SYLVIA AYCOCK

**6:10-6:25 PM** **Room 214**

CITY OF LIGHT: AN EXPLORATION  
OF HISTORY ON THE STAGE  
DANIELLE WIRSANSKY

**6:35-6:50 PM** **Room 103**

DNA SEQUENCING FOR DETECTION OF GENE  
MUTATIONS IN ONCOGENIC KINASE TOPK IN  
HUMAN CANCER CELLS  
REEMA TAWFIQ

**6:35-6:50 PM** **Room 114**

HISTORY, MEMORY AND REVOLUTIONARY  
AUTHORITY IN EIGHTEENTH-CENTURY  
FRANCE AND AMERICA  
HARRISON DISKIN

**6:35-6:50 PM** **Room 201**  
NANOPARTICLE-PEPTIDE SUSPENSION  
DYNAMICS USING DIFFUSING-WAVE  
SPECTROSCOPY  
JASON MADINYA

**6:35-6:50 PM** **Room 205**  
ART AND ENGLISH LEARNING IN PERCEPTION  
AND PRACTICE:  
CASE STUDY IN RURAL INDIA  
GABRIELA FULGINITI

**6:35-6:50 PM** **Room 214**  
FOUR WORDS  
DREXSTON REDWAY

**7:00-7:15 PM** **Room 103**  
DETERMINING THE GENETIC NETWORK OF  
PRIMARY MICROCEPHALY DISEASE (MCPH)  
BARBARA DIETRICK

**7:00-7:15 PM** **Room 114**  
ANALYSIS OF HUMERAL TROCHLEAR  
ANGLES AS POSSIBLE BIOLOGICAL  
SEX CHARACTERISTIC  
ALEXA PENNAVARIA

**7:00-7:15 PM** **Room 201**  
REMODELING THE GENOME: THE FIRST LIVE  
FLUORESCENT IMAGES OF HOW THE HUMAN  
GENOME RESPONDS TO A STIMULUS  
ASHLEY WARD

**7:00-7:15 PM** **Room 205**  
THE USE OF A MOBILE-BASED DECISION  
SUPPORT SYSTEM IN AGRICULTURE: AN  
INTERPRETIVE CASE STUDY IN SOUTHWEST  
AND CENTRAL BANGLADESH  
OMAR ISMAIL

**7:00-7:15 PM** **Room 214**  
SKILLSET OF WOMEN IN TAFI  
ATOME, GHANA  
LJUBICA NIKOLIC

**7:25-7:40 PM** **Room 103**  
“CLICK” TRIAZOLE AS THE PROTON  
ACCEPTOR IN EXCITED STATE  
INTRAMOLECULAR PROTON  
TRANSFER DYES  
JOSEPH ACCARDO

**7:25-7:40 PM** **Room 114**  
ANTI-PREDATORY BEHAVIORS IN  
NOCTURNAL PROSIMIANS AT THE  
DUKE LEMUR CENTER  
CODY MOSER

**7:25-7:40 PM** **Room 201**  
A COMPARISON OF CHILD WELFARE  
INTERNSHIPS VS. NON CHILD WELFARE  
INTERNSHIPS  
MACKENZIE MCDUGALL

**6-7:30 PM** **Room 115**  
CREATIVE PRESENTATIONS

EXCERPTS OF CREATIVE WORKS  
ONGOING—SEE SCHEDULE POSTED  
OUTSIDE ROOM



**JOSEPH ACCARDO**, a senior Biochemistry major, became involved in research through the Undergraduate Research Opportunity Program (UROP). Previously he worked in the lab of Johanna Paik in the College of Medicine where he now works with Lei Zhu in the Department of Chemistry. He is currently working on his honors thesis and is serving as a UROP leader. After graduation Joseph plans to pursue a Ph.D. in Chemistry, where his career goal is to become a research professor at a university.



**BARBARA DIETRICK** is in her final year as a Biology major and began research as a freshman in the Undergraduate Research Opportunity Program (UROP). She started conducting research under Dr. Timothy Megraw in the spring of 2013. She successfully completed and defended her honors thesis in the summer of 2015. She aims to share her passion for research as a current UROP leader. Upon graduation, Barbara plans to attend medical school and leverage her skills for the benefit of those patients who inspire research, and to use research to keep patients' medical care at the forefront of biomedical discoveries.



**SYLVIA AYCOCK** is a senior Music Education major continuing to search for ways to make the world a better place. As a freshman, she participated in the Global Scholars program with a summer internship in Peru at a non-profit arts organization. That experience sparked her interest in combining her passion for music and her desire to catalyze social change. Since then, Sylvia participated in UROP and won the MRCE award to study music education in Brazil. Currently, Sylvia is developing this research into her honors thesis. Upon graduation Sylvia will continue her work as a researcher-practitioner in the music classroom.



**HARRISON DISKIN**, a native of Hollywood, Florida, is in his final year as a History and Humanities major. Having spent a portion of the summer conducting research in Paris, he is currently completing an honors thesis on Americans' reactions to the French Revolution as they relate to collective memory and historical narrative. Upon graduating, Harrison plans to pursue a Ph.D. in early modern European intellectual history.



**COLE FRIEDES** is a senior from Jacksonville, Florida, majoring in Biochemistry. He is an aspiring researcher and physician, and aims to pursue an MD/MPH dual degree after graduation. He began working with Dr. Jonathan Dennis in 2013 and is currently finishing his honors thesis on Cocaine's Effect on Chromatin Structure. This is his second year serving as a UROP leader. In his free time he enjoys playing frisbee and cooking with his roommates.



**GABRIELA FULGINITI** is in her senior year pursuing a dual degree in Studio Art and International Affairs, with a minor in Entrepreneurship. She worked with Professor Holly Hanessian on an artistic research project in 3D ceramic printing through the Undergraduate Research Opportunity Program (UROP). She received the Ranck International Study Award to spend 7 weeks immersed in Hindi study. This summer's research project was born out of two previous trips to India, where she was a volunteer teaching English. After graduation, she plans to teach English abroad for a few years before getting her masters degree in International Education.



**DANIEL HUBBARD** is a student-veteran majoring in Psychology and Sociology. Upon entering Florida State University, he enrolled in the Undergraduate Research Opportunity Program (UROP) and has since participated in several research endeavors involving veterans or active duty personnel. Daniel will continue this research as a part of his honors thesis under the supervision of Dr. Thomas Joiner. After graduation, he hopes to continue working with veterans in other capacities as he enters his graduate education.



**OMAR ISMAIL** is in his final semester of a B.A. in Media/Communication Studies and is currently working on his honors thesis under the supervision of Dr. Stephen McDowell. Omar traveled to Southwest and Central Bangladesh this summer to learn about a behavior change intervention among farmers using a mobile-based Decision Support System. He is a recipient of the Bill and Eloise Mills Scholarship in Communication in 2014 and also a former member of the Transfer Leadership Institute at FSU. In the future, he hopes to pursue a master's degree in Information and Communications Technologies.



**JASON MADINYA**, a senior in the Chemical Engineering department, is currently working on his honors thesis in Dr. Yan Li's lab at the department of Chemical and Biomedical Engineering at the College of Engineering. Upon graduation, Jason plans on pursuing a Ph.D. in Chemical Engineering. He would like to do research on tissue engineering in graduate school and hopes to eventually become a tenured professor. He is a first-generation American, as well as a first-generation college student in his family.



**CODY MOSER** is a current senior completing his honors thesis for his final year in the Anthropology program at FSU. He currently interns at the Center for Anchored Phylogenomics under Dr. Emily Lemmon in the Department of Biology. He has conducted previous research on wild white-faced capuchin monkeys in Costa Rica, and plans to continue his education and research in primatology after graduation by attending graduate school. His research interests include human language origins, the interactions between predator and prey, and the cognition expressed by animals through their communication.



**MACKENZIE MCDUGALL**, a Tallahassee resident, is in her final year of Social Work and is currently working on her honors thesis. Since the beginning of the summer, she has been conducting research under Dr. Dina Wilke at the College of Social Work. Upon graduation, Mackenzie would like to continue her research within the field of Social Work while obtaining her master's. Her career goal is to become a case manager in a hospital for children and families undergoing treatment for cancer.



**LJUBICA NIKOLIC** is an International Affairs student who is passionate about development and women's rights. Through Global Peace Exchange, she has volunteered in Ghana for the past two summers. Last year, Ljubica, along with two other FSU students, helped develop a women's merchandise business called Compassionate Women. With the help of her supervisor, Dr. Mayo, and her co-researcher Melissa Magalhaes, this summer's project focused on working with the women in Tafi Atome, Ghana, to document and develop the women's skillsets. After graduation Ljubica is hoping to pursue a master's degree in International Development.



**ALEXA PENNAVARIA** is an URCAA and Benjamin A. Gilman award recipient for her research in Germany and France on human osteology. Currently, she is working on her honors thesis that is a culmination of her year in the Undergraduate Research Opportunity Program (UROP) and her summer abroad. This academic year, she will be a UROP Leader and an intern at the Bureau of Archaeological Research. After earning a B.S. in Anthropology with a minor concentration in Museum Studies in the spring of 2016, she will pursue a Ph.D. in Biological Anthropology.



**RYAN REILLY** is a senior pursuing a double major in Criminology and Management. He has been interested in research since his freshman year when he took a seminar taught by Professor Daniel Maier-Katkin, who has since afforded Ryan several research opportunities. He is currently working on an honors thesis in Criminology that will utilize the findings from his work in Germany this past summer. After graduation, he plans to attend law school and ultimately specialize in criminal law.



**DREXSTON REDWAY** is a Studio Art and Marketing major, currently in his third year and completing an honors thesis. A former UROP student, he spent his sophomore year assisting Professor Joelle Dietrick in completing several nationally recognized site-specific artworks and visual research. Drexton hopes in his last two years to continue to be involved across campus, while seeking out additional opportunities in research and the arts.



**REEMA TAWFIQ**, a Tallahassee native, is in her final year as an Exercise Science major and is currently working on her honors thesis. Reema was a former Undergraduate Research Opportunity Program (UROP) participant and is now serving her second year as a UROP Leader. Since the beginning of her second year at FSU, she has been conducting research under Dr. Raed Rizkallah in Dr. Myra Hurt's laboratory at the College of Medicine. Upon graduation, Reema would like to attend medical school. She hopes to continue her research and hopes it can advance medical science.



**ASHLEY WARD**, a third year Biological Science major, has been conducting research in Dr. Jonathan Dennis' chromatin biology laboratory since the beginning of fall 2014. She participated in the Undergraduate Research Opportunity Program (UROP) her second year at Florida State. She is currently a UROP leader and a teaching assistant for the Department of Biological Sciences. Upon graduating she plans on continuing her education in either graduate school or medical school for a career in preventative medicine and holistic health.



**DANIELLE WIRSANSKY** is in her final year pursuing dual degrees in Theatre and Creative Writing with a minor in History and is currently working on her honors thesis. She has been conducting research under Dr. Nathan Stoltzfus since her acceptance into the Undergraduate Research Opportunity Program (UROP) in fall of 2013. Her URCAA is the continuation of her 2014 MRCE project. She served as the FSU Student Theatre Association Marketing Director and currently is an intern for the Holocaust Education Resource Council and Editor of the FSU Branch of Uloop News. Danielle plans to pursue a master's in Holocaust Studies.

Undergraduate Research and Creativity  
Activity Awards (URCAA)

“CLICK” TRIAZOLE AS THE PROTON ACCEPTOR  
IN EXCITED STATE INTRAMOLECULAR PROTON  
TRANSFER DYES

**JOSEPH ACCARDO**

SUPERVISING PROFESSOR: DR. LEI ZHU

The development of organic fluorescent molecules has served as a long held interest in the scientific community, especially due to their adoption as important tools in a wide range of disciplines. Common applications of these molecules range from biological imaging to the development of energy efficient white light-emitting materials. By understanding the physical dynamics that govern these fluorescent properties, a more efficient approach to their development can be made. Herein, we are interested in the development of new organic molecules that exhibit excited state intramolecular proton transfer (ESIPT). Upon photo-excitation these molecules generally undergo an intramolecular proton transfer reaction, which is accompanied by a loss of energy and an unusually long emission on the visible spectrum. In typical ESIPT dyes, simple electron pushing (but universally dreaded by sophomore organic enrollees) can illustrate the driving force of excited state proton transfer. The exceptions of ESIPT that cannot be explained by electron pushing have been explained by a zwitterionic excited state structure. We are curious if a triazole moiety can act as proton acceptor in the ESIPT process, despite its inability to be explained by electron pushing. Four compounds have been made to test this possibility, and if affirmative, to determine the structural factor that determines the efficiency of intramolecular proton transfer. By performing various absorption and fluorescent spectroscopy experiments we were able to gain valuable insight into the photo-physical properties of the four compounds.

MUSIC EDUCATION AND SOCIAL WORK: A  
CASE STUDY OF THE GURI SANTA MARCELINA

**SYLVIA AYCOCK**

PROFESSOR: DR. FRANK GUNDERSON

Beyond teaching students to sing and play instruments in an ensemble, many community music organizations aim to teach discipline and mold character. One such organization, the Guri Santa Marcelina located in Sao Paulo, Brazil, provides a social justice driven music education in which students of all backgrounds and circumstances are afforded the opportunity to study music, something the Guri sees as a fundamental right. Employing both music educators and social workers, the Guri attends to the needs of the students holistically in and outside of the classroom, working with families and the community at large. The organization currently has 46 satellite locations throughout the city of 20 million. In participating in music classes and activities, and interviewing teachers and social workers at the Guri Santa Marcelina, I hope to learn more about how their mission plays out in reality. What are the challenges the students face? What pedagogical decisions do the teachers make in planning their classes? What are some ways the social workers meet the students', families', and communities' needs? How do they work together? Contextualizing my interactions and reflections with a review of the literature, I will explore the practical aspects of creating social change through music education.

## DETERMINING THE GENETIC NETWORK OF PRIMARY MICROCEPHALY DISEASE (MCPH)

**BARBARA DIETRICK**

The Helen Louise Lee Undergraduate Research Award

SUPERVISING PROFESSOR: DR. TIMOTHY MEGRAW

The developmental disorder, autosomal recessive primary microcephaly (MCPH), results in reduced cerebral cortex growth during fetal development. Mutations in 9 centrosome protein-encoding genes characterize this genetically heterogeneous disease. We used centrosomin (*cnn*) mutant *Drosophila* as the model to genetically dissect the disease pathway. Centrosome assembly and microtubule-organizing regulation requires *cnn*, but *cnn* mutant adults survive with undefined neuropathology, presumably related to MCPH pathology. To discover the basis of this pathology, we used an RNA interference screen to identify *cnn* mutant modifiers. From this approach, we discovered that genes controlling autophagy and microtubule regulation strongly enhanced *cnn*. Two components of the augmin complex, an eight subunit complex that regulates microtubules during mitosis, were identified in the screens. I investigated one of these augmin subunit mutants, a mutation in *dim gamma tubulin 4* (*dgt41*), and found neuroblasts with impaired microtubule organization and reduced *Cnn* and *gamma-tubulin* centrosomal recruitment. The *dgt41* mutant shows an early embryo lethality with severe microtubule-organizational defects, including a lack of microtubules attached to kinetochores. These findings suggest microtubule organization and autophagy play critical roles in MCPH. Because autophagy requires *cnn* and microtubules, and the combination of *dgt4* and *cnn* mutations is lethal, I hypothesize that *Dgt4*, and the augmin complex, also regulate autophagy. This would be an entirely new function for this conserved protein complex. My project tests this novel concept and contributes valuable information about autophagy regulation and MCPH mechanisms.

## HISTORY, MEMORY AND REVOLUTIONARY AUTHORITY IN EIGHTEENTH-CENTURY FRANCE AND AMERICA

**HARRISON DISKIN**

The Michael J. Shaara Undergraduate Research And Creative Activity Award

SUPERVISING PROFESSOR: DR. EDWARD GRAY

A fundamental tension exists between revolution and memory, for as a society's perception of historical time and its relationship to the present is disrupted in the face of an utterly unknown future, the realm of memory becomes a central arena of sociopolitical competition. Control over memory thus becomes equated with political power. This is a fact that was readily understood in France throughout the second half of the eighteenth century, and America most notably in the decades proceeding the Revolution. Unlike their European brethren however, there simply was no "American" memory prior to the Stamp Act Congress in 1765 for there was no major legacy of colonial union. Thus American rhetoricians were often forced to appropriate memories of alien origin—namely French and British—as they endeavored to forge a uniquely American identity in the wake of their own Revolution, and as they reacted to the Revolution in France. By considering these political arguments in comparison with those made by French political theorists, it becomes apparent that competition over the American Presidency leading up to the election of 1800 was not simply a fight over political authority, but over the memory—indeed the legacy—of the American Revolution itself.

**COCAINE'S EFFECT ON THE HUMAN GENOME****COLE FRIEDES**

SUPERVISING PROFESSOR: DR. JONATHAN DENNIS

DNA is the biological blueprint that determines differences in cell types, decisively manufactures proteins, and is the global language of all hereditary information. In our body there is almost an incomprehensible amount of genetic material. Each cell contains about 2-3 meters of DNA compressed into an infinitesimally small nucleus, which is about 5/1000ths of a millimeter. With approximately 50 trillion cells in the human body, there is enough DNA in each human to wrap around the earth about 2.5 million times. With such an inconceivable amount of material in each cell, our cells must perform an extraordinary feat of structuring and packaging DNA into higher order DNA and protein structures called chromatin. The organization of this chromatin plays a large role in the regulation of the human genome and also human disease.

**NUMBER OF DEPLOYMENTS AND THE INTERPERSONAL THEORY OF SUICIDE****DANIEL HUBBARD**

SUPERVISING PROFESSOR: DR. THOMAS JOINER

In recent years, suicide in the military population has increased to where it now, by some estimations, exceeds the civilian suicide rate. Although many resources have been dedicated to ameliorating this troubling trend, there is much left to understand about suicidal desire and actions, particularly in the military. One well-received theory that evaluates these aspects of suicide is the Interpersonal Theory of Suicide. The core constructs of this theory assess one's thwarted belongingness, perceived burdensomeness, and an acquired capability to lethally enact suicide. This study proposed that these constructs should be evaluated alongside the number of deployments of service members. Using survey responses from a sizable sample of Army personnel allowed for regression analysis and provided an increased understanding of the impact that number of deployments have on these theoretical concepts.

**NANOPARTICLE-PEPTIDE SUSPENSION DYNAMICS USING DIFFUSING-WAVE SPECTROSCOPY****JASON MADINYA****The David B. Ford Undergraduate Research And Creative Activity Award**

SUPERVISING PROFESSOR: DR. SUBRAMANIAN RAMAKRISHNAN

Diffusing Wave Spectroscopy is a relatively new technique in Light Scattering that can be used to probe the dynamics of complex fluids with nanoparticles. Nanoparticles are used in a number of applications, such as drug delivery, sensors, imaging, renewable energy and consumer products. In order to better understand the processing and assembling of these suspensions, we need to study the dynamics of the system. The system we are looking at is a suspension containing nanoparticles and peptide. We wish to use light scattering to study the dynamics of these suspensions; however, traditional methods can only be used when the light is singly scattered. This is possible when concentrations are low, but when the suspension contains high concentrations of polymers and nanoparticles, the light undergoes multiple scattering. Diffusing-wave spectroscopy allows us to probe the dynamics of the particles when there is multiple scattering. We studied these systems using DWS, and correlated the data to the measurements of rheological properties taken using the rheometer in Dr. Ramakrishnan's lab in the National High Magnetic Field Laboratory.

## ANALYSIS OF HUMERAL TROCHLEAR ANGLES AS POSSIBLE BIOLOGICAL SEX CHARACTERISTIC

**ALEXA PENNAVARIA**

SUPERVISING PROFESSOR: DR. GEOFFREY THOMAS

When crucial areas of skeletal remains are not present or are too fragmentary, determining biological sex can be extremely difficult. To solve this problem, recent studies have suggested alternative methods for determining sex from skeletal remains. One of the most promising methods examines the trochlear angle of the humerus. The trochlear angle is of particular interest due to the dramatic variation noted between individuals and possibly between the sexes. Research performed thus far has shown significant variation in this angular trait with females having much higher angles than males. This project uses the geometric morphometric software TPSDig2 as a new technique for evaluating trochlear angles from photographed dry humeri as a possible determination of biological sex. The sample used is comprised of the right and left humeri of 40 individuals from the archaic population of Windover, Florida and 74 individuals from various collections housed at the University of Tübingen, Germany. This project also evaluates occupational stresses and handedness as possible theories behind why this difference between the sexes may occur in this archaic population.

## THE EDELWEISS PIRATES: DELINQUENCY AND RESISTANCE IN NAZI GERMANY

**RYAN REILLY**

SUPERVISING PROFESSOR: PROFESSOR DANIEL MAIER-KATKIN

The Edelweiss Pirates were an organization formed by teenagers in and around Cologne, Germany, during the 1930s and 1940s in response to Hitler's oppressive regime. In a time when participation in youth organizations other than the Hitler Youth was prohibited, the Pirates engaged in social activities that were not afforded to them by membership in the Hitler Youth, such as camping, hiking, and interacting with the opposite sex. Ultimately, however, the group engaged in more aggressive and oppositional behaviors against the Third Reich. For instance, it has been documented that the Pirates launched assaults against the Hitler Youth, supported other resistance groups, and distributed Allied propaganda. The Nazis responded to the group's activities in various ways, which included imprisoning members in concentration camps. The group disbanded following the end of the war, though some factions did continue to exist in post-war Germany. Over the past 70 years, many articles and books have been written about the Pirates and their actions. Despite the proliferation of literature about the group, many people continue to debate whether the Pirates were a resistance group, or simply a group of juvenile delinquents. Accordingly, I am interested in painting a better picture of the Edelweiss Pirates. I spent four weeks in Germany visiting archives in search of original documentation (e.g., court records, government correspondence, newspaper articles, etc.) and secondary literature about the group. By translating and analyzing the documentation and literature that was discovered in the archives, my research seeks to increase our overall understanding of the group and its activities, and contribute to scholarly discourse on juvenile delinquency, and also on the nature of resistance in totalitarian states. The findings from my research will contribute to my Honors in the Major thesis about the group.

## DNA SEQUENCING FOR DETECTION OF GENE MUTATIONS IN ONCOGENIC KINASE TOPK IN HUMAN CANCER CELLS

**REEMA TAWFIQ**

SUPERVISING PROFESSORS: DR. RAED RIZKALLAH AND DR. MYRA HURT

The role of mitosis in the cell cycle is to systematically divide a mother cell into two genetically identical daughter cells. A successful entry and execution of mitosis is heavily reliant on properly phosphorylating signaling pathways. Kinases are enzymes that catalyze phosphoryl transfers from adenosine triphosphate (ATP) to substrates and change downstream protein-protein interactions that signal pathways to either turn on or off. T-LAK cell-originated protein kinase (TOPK), a serine/threonine kinase, was found to play a global mitotic role in simultaneously regulating hundreds of DNA binding proteins. Multiple studies have shown that the expression of an oncogenic kinase TOPK is upregulated in many types of cancers. Cancer cells can develop as a result of genetic mutations that cause an abnormal expression of cellular proteins consequently leading to uncontrollable cell growth. It is known that TOPK is essential for the mitotic division. However, the main mitotic substrates of TOPK and its function in mitosis are not fully understood yet. This research project focused on sequencing TOPK's DNA in human embryonic kidney cells, osteosarcoma cells, colon cancer cells, cervical cancer cells, and foreskin cells in pursuit of detecting any genetic mutations. Sequencing provides the genetic information that can be used to deduce a particular protein's function, structure, and location, which in turn aids in the understanding of that protein. My project is divided into four main steps: culturing human cancer cells, isolating TOPK's messenger RNA, amplifying TOPK's DNA, and sequencing the DNA.

## REMODELING THE GENOME: THE FIRST LIVE FLUORESCENT IMAGES OF HOW THE HUMAN GENOME RESPONDS TO A STIMULUS

**ASHLEY WARD**

SUPERVISING PROFESSOR: DR. JONATHAN H. DENNIS

DNA has a negative charge, and organisms with large genomes must spool their DNA around positively charged structures called histones. The structure formed by the wrapping of DNA around the histone spool is called a nucleosome. For a cell to respond to its environmental signals, the DNA material must be reorganized on these spools to be made available to regulatory factors. Classes of proteins called remodeler proteins are responsible for the redistribution of nucleosomes during a genomic response to a stimulus. These nucleosome remodelers are currently a large area of study, but the mechanisms of their functioning are largely unknown. I proposed that by labeling an important remodeler complex with fluorescence, that I would be able to track its activity during a genomic response and see where it goes to unwind the genome. With the support from The Undergraduate Research and Creative Activity Award, I was able to label a chromatin remodeler with Enhanced Green Fluorescent Protein (EGFP). I used the Andor Live Image Confocal Microscope, and took 3D deconvolution images to monitor the activity of a remodeler as it works to regulate the genomic response in live cells. These are the first ever images of this fundamental gene regulation event. I gathered information that gives us insight into the role and location of chromatin remodelers within a genomic response. These results lay the foundation for a new set of insights regarding how genes are regulated.

## CITY OF LIGHT: AN EXPLORATION OF HISTORY ON THE STAGE

**DANIELLE WIRSANSKY**

SUPERVISING PROFESSOR: DR. NATHAN STOLTZFUS

In 2011, the French government released declassified information into the national archives and the “lost” sham city of Paris was rediscovered. It had been built by France during WWI to mislead German Gotha bombers, and after the war, was forgotten. In the first phase of this project, the MRCE, I traveled to Paris and did firsthand research on this fake city by interviewing the journalist who first found record of the Fake Paris in the archives, exploring the sites and locations of the original fake Paris, and visiting other notable Parisian landmarks—this research culminated in a play exploring the city’s existence during WWII and the Holocaust. In the second phase of the project, the URCAA, I worked with a composer to create original music as well as to reinterpret Jewish music created pre-WWII. I also assembled a team, including but not limited to a stage manager, choreographer, and designers, to work towards producing the musical on the FSU campus.

## Public Service Research Fellowship (PSRF)

## ART AND ENGLISH LEARNING IN PERCEPTION AND PRACTICE: CASE STUDY IN RURAL INDIA

**GABRIELA FULGINITI**

SUPERVISING PROFESSOR: DR. HELEN BOYLE

Because of India’s many languages, English is used as a lingua franca. Beyond that, it is a sign of social capital, perceived intelligence, and is necessary for employment in many places. Great importance is attached to English learning, while art is often neglected and viewed as unnecessary. Based on two prior trips to a home for disadvantaged children in North India, I created a project that sought to combine these two subjects. I created an after school art program for 3rd and 4th graders that used art instruction as a medium for conversational English. I wanted to capture the excitement and creativity that the children exhibit in their art lessons, and use it to help them learn English. I did this through reading books aloud that pertained to the art lesson, as well as lessons integrating English vocabulary and grammar into art projects. I administered an oral and written English test to gauge their spoken vocabulary and reading skills before and after the intervention to gauge if class participation affected English knowledge. I interviewed school teachers to explore perceptions of art, English, and ideas of teaching methodology. I had the opportunity to be a participant observer for the entire 6 weeks, as I lived on campus with the teachers, staff and children. I took field notes on class behaviors, and conversations with teachers and staff, often in a mix of Hindi and English. The research project produced a set of anthropological interviews about English, art, and education philosophies, as well as a case study about the effectiveness of art as a English teaching method.

## THE USE OF A MOBILE-BASED DECISION SUPPORT SYSTEM IN AGRICULTURE: AN INTERPRETIVE CASE STUDY IN SOUTHWEST AND CENTRAL BANGLADESH

**OMAR ISMAIL**

SUPERVISING PROFESSOR: DR. STEPHEN MCDOWELL

The use of mobile-based Decision Support Systems in Agriculture is gaining much attention around the world, mainly so that limited resources can be used effectively and efficiently. Decision Support Systems can help to reduce financial uncertainty in developing countries like Bangladesh. Because of climate change and frequent natural disasters like cyclones and floods, farmers of Bangladesh suffer from lost productivity every year. Easy to use mobile-based support systems can help smallholder farmers to make informed agro-decisions. However, it is important to consider user-centered design in the process of system design. This study is an interpretive case study that explores the adoption of a mobile-based support system for accessing agricultural information in rural context. Alongside document analysis, the data collection process includes interviews and focus group discussions with farmers and agriculture extension workers, as well as participant observation. The outcome of this research is a qualitative assessment of a decision support system in the context of rural Bangladesh. This study also helps to provide a better understanding of users' behavior with the support system developed by mPower Social Enterprises Ltd. The underlying purpose of doing so is to develop better and more effective systems for farmers that can be easy to use and helpful. It allows for a better understanding of how to provide essential technology services to the farmers' community.

## SKILLSET OF WOMEN IN TAFI ATOME, GHANA

**LJUBICA NIKOLIC**

SUPERVISING PROFESSOR: DR. JOHN MAYO

Compassionate Women is a business started in Tafi Atome, Ghana in June 2014 by the NGO Compassionate Journeys. It aims to provide the women in Tafi Atome with an alternate source of income. Many studies have demonstrated that acquiring a job in rural Africa as a woman is difficult. The following research focuses on observing the skillsets of the women in Tafi Atome using qualitative methods in order to benefit the new business, Compassionate Women. The women's educational background and financial standing played a substantial role in determining both their skillsets and their opportunities to apply them. Research was conducted through individual interviews with the assistance of a translator to assure clarity.

## FOUR WORDS

**DREXSTON REDWAY**

SUPERVISING PROFESSOR: PROFESSOR  
JOELLE DIETRICK

"Four Words" is a social practice art series intended to explore methods of fostering public, inter-minority dialogues and acts of solidarity. In this particular piece, I collaborated with the PACE Center for Girls, Leon County, to investigate how race, gender, and socioeconomic status intersect. The students (at-risk young women between the ages of 12 and 18) anonymously responded to questions I posed about clothing, important memories, thoughts, and qualities about themselves they found important to share. By allowing the students to share their unique ideas and perspectives on life so publicly, we were able to contribute to dismantling assumptions made about PACE students and raise awareness of the organization. Holistically, the students' responses provided a subtle critique on the multifaceted nature of prejudice and illustrated an awareness and understanding of gender equality. This written dialogue between the girls and myself was combined with various media and textiles to create an installation that further amplified our exchange of ideas and information. Members of the exhibition space were encouraged to physically interact with the work and question how the transformations in materiality correspond to the human interactions themselves.

## Social Work Undergraduate Research and Creative Activity Award (SWURCAA)

### A COMPARISON OF CHILD WELFARE INTERNSHIPS VS. NON CHILD WELFARE INTERNSHIPS

**MACKENZIE MCDUGALL**

SUPERVISING PROFESSOR: DR. DINA WILKE

In recent years, it has been noted that there is an increase in the turnover rate of social workers in the field of child welfare. With this increase in turnover, adolescents in foster care are not getting the proper amount of attention from remaining social workers with large caseloads. Many studies on this observation have noted a possible connection of the turnover rates and organizational/personal factors of individuals and their agencies. The following study was conducted to compare and contrast the self-reported surveys taken by social work students at Florida State University before and after their field placement at a social work agency. The first phase involved the completion of distributing and collecting surveys from social work students about to enter a social work agency for their placement. The second phase involved having the social work students complete and turn in the same survey after they completed their placement in a social work agency. The final phase involved the data analysis and comparison of both the pre and post surveys to examine the similarities and/or differences in responses. This study gathered insightful information about child welfare retention compared to other agency retention rates through participant observations while in their field placement and drew notable conclusions.

## ACC Collaborative Research Award

### ANTI-PREDATORY BEHAVIORS IN NOCTURNAL PROSIMIANS AT THE DUKE LEMUR CENTER

**CODY MOSER**

SUPERVISING PROFESSORS: DR. EMILY LEMMON (FLORIDA STATE UNIVERSITY), DR. ERIN EHMKE (DUKE UNIVERSITY), DR. ANNE YODER (DUKE UNIVERSITY)

The study of nonhuman primates sheds light on the conditions that reflect our earliest ancestors. In the case of prosimians, as a much more basal radiation of the primate order than all others, this is certainly more exaggerated. Through observations of lemurs and the vocalizations unique to them, we can try and replicate conditions that may have taken place leading up to the advent of language in modern humans. While nocturnal primates compose a large representation of the 300-odd primate species alive today, with at least one-third of all primate species discovered exhibiting nocturnal behaviors, few studies have been undertaken to examine the relationship between their systems of communication and the environment. In this project, I build upon the relationship between nocturnal prosimians and their predators through the use of false predator models and playback experiments. Using hawk calls, owl calls, and calls elicited by other predators found in their natural habitats, I attempted to elicit vocal and behavioral responses from the semi-free-ranging lemurs and lorises contained at the Duke Lemur Center in Durham, North Carolina. In addition to this, a model fossa was placed in the enclosure during the experiments when fossa calls were played. Expanding upon an original experiment conducted on mouse lemurs in their natural habitat, I was able to increase the sample size from eight mouse lemurs to over forty animals across five different species of prosimian, including gray mouse lemurs, fat-tailed dwarf lemurs, aye-ayes, slow lorises, and ring-tailed lemurs. Data gathered in these experiments were supplemented by recordings and behavioral observations taken of the lemurs in their free-range and colony-group enclosures at the Lemur Center utilizing ultrasonic recording equipment.

Mentored Research and Creative Endeavors Awards (MRCE)

THE ROLE OF MPS3 IN CENTROSOME SEPARATION IN BUDDING YEAST

### REBECCA ABLETT

The Phi Eta Sigma Endowed Scholarship to Enhance Undergraduate Research

SUPERVISING PROFESSOR: DR. HONG-GUO YU

Rebecca Ablett is in her final year at Florida State University. She is working on obtaining a Biology degree, as well as continuing to work on her honors thesis. Rebecca has been a part of the Honors College and the Undergraduate Research Opportunity Program (UROP). For two years, she has been conducting research under the incredible supervision of Dr. Hong-Guo Yu. After graduation, Rebecca would like to pursue a career in neurodegenerative research while obtaining a Ph.D. in Neuroscience. Her ultimate goal is to work for an independent research organization, such as the Max Planck Institute, and to conduct research abroad.

RADICAL CYCLIZATIONS: A SYNTHETIC APPROACH TO POLYAROMATIC MATERIALS

### DAVID ALLENGER

SUPERVISING PROFESSOR: DR. IGOR V. ALABUGIN

David Allenger, a Miami native, is a senior and is currently finishing his degree in Biochemistry and Biology. Since his sophomore year, David has been working with Dr. Alabugin to expand the synthetic utility of carbon-centered radical reactions in synthetic organic chemistry and materials science. Moreover, his work in the Alabugin lab has earned him a coauthorship for the group's most recent publication in *The Journal of Organic Chemistry*. While chemistry is just part of what David enjoys, his career goal is to become a licensed physician and to conduct his own research in the medical field.

TRADE-OFFS BETWEEN FRIENDS AND FOOD? PHOTOTACTIC RESPONSE OF THE ANEMONE APTASIA PALLIDA

### SAMUEL BEDGOOD

SUPERVISING PROFESSOR: DR. JANIE WULFF

Samuel Bedgood is a Biology student who has worked in Dr. Janie Wulff's lab for almost two years. His research interests involve aquatic ecology and evolution. He is currently investigating how algal symbionts affect the behavior of anemones in the Florida Keys. He plans to continue his work into this upcoming fall and spring as an honors thesis. After graduating he will go onto graduate school to obtain his Ph.D. in an Ecology and Evolution program. He hopes one day to work as a professor at a research university.

(A)LINGUAL ENCOUNTERS: A STUDY IN HUMAN INTERACTION

### ELLEN BOENER

SUPERVISING PROFESSOR: DR. KRIS SALATA

Ellen Boener, from Port Orange, is in her last year and is working on a triple major in Theatre, Creative Writing, and International Affairs. She is also a UROP participant and is earning a TEFL certification. Ellen has been working on her honors thesis in practical performance research since last spring under the direction of Dr. Kris Salata. Her project focuses on the development of (a)lingual interactions in a performance setting. After graduation she plans to teach English abroad before completing a Master's degree in English and Education.

## ANALYSIS OF CELLULOSE HYDROLYSIS KINETICS

### DEANNA BOUSALIS

SUPERVISING PROFESSOR: DR. JOHN TELOTTE

Deanna Bousalis is a senior Chemical-Biomedical Engineering student currently working on her honors in the major thesis. She has been conducting research under Dr. John Telotte at the FAMU-FSU College of Engineering since her participation in the Undergraduate Research Opportunity Program (UROP) two years ago. Last year, she served as a UROP Leader for the UROP engineering cohort. Deanna's goal upon graduation is to enter either an M.D.-Ph.D. program or a graduate program in Biomedical Engineering.

## EXPLORING BODY POSITIVITY THROUGH NONTRADITIONAL PORTRAITURE

### KELLEY CUNNINGHAM

*The Phi Eta Sigma Endowed Scholarship to Enhance Undergraduate Research*

SUPERVISING PROFESSOR: PROF. PAUL RUTKOVSKY

Kelley Cunningham, originally from Seattle, Washington, is a BFA Studio Art and Creative Writing major. Last year, she conducted research on Dolly Parton and the gendering of country music with Dr. Leigh Edwards through UROP, and she is currently a UROP leader. In the future, she would like to continue combining body image research with creative endeavors and hopes to find a career creating feminist-friendly cartoons or comics.

## A COMPILATION AND ANALYSIS OF CONFIRMED TYPE Ia SUPERNOVAE USING DATA OBTAINED FROM THE HUBBLE SPACE TELESCOPE

### MILES CURRIE

SUPERVISING PROFESSOR: DR. DAVID RUBIN

Miles Currie, an honors student, is in his third year of the Physics and Astrophysics B.S. degree. Since the fall of 2014, he has been conducting research under the supervision of Dr. David Rubin of the Astrophysics department. His primary interests include deep field observations using the Hubble Space Telescope and supernova cosmology. Upon graduation, Miles will further his skill set in becoming a Nuclear Submarine Officer of the United States Navy and he hopes to someday further pursue his fondness for astronomy.

## MUSIC ENSEMBLES AND THE AUTISTIC SOCIAL EXPERIENCE IN COLLEGE

### JEFFREY EDELSTEIN

SUPERVISING PROFESSOR: DR. MICHAEL B. BAKAN

Jeffrey Edelstein is entering his third year as a Business and Music double major. He began working with Dr. Bradley E. Cox through the Undergraduate Research Opportunity Program (UROP) by researching Autism Spectrum Disorder in Higher Education last fall. He will continue working on this research project in the upcoming year, and will also be serving as a UROP Leader for one of the transfer student sections. He will also begin his work on his honors thesis. After graduation, Jeffrey would like to continue research in the educational field, either by pursuing a Ph.D. in Higher Education or a J.D. related to public educational policy.

## CREATION OF A THERMOPLASTIC NANOCOMPOSITE ELASTOMER WITH SELF HEALING

**RASHID ELSAMRA**

SUPERVISING PROFESSOR: DR. HOYONG CHUNG

Rashid Elsamra, a Tallahassee native, is a rising junior studying Chemical Engineering with a specialization in biomedicine and materials. He has performed research with Dr. Hoyong Chung since November of 2014. Rashid intends on obtaining a Ph.D. with the ultimate goal of teaching at a university and leading a research group of his own. Rashid also serves as a House Manager at Southern Scholarship Foundation, where he oversees sixteen diverse young men. His other interests include Intramural Soccer, volunteer work through The Center for Leadership and Social Change, and managing a computer lab at the Dedman School of Hospitality.

## ANALYSIS OF INDUCED MIGRAINES USING SODIUM AND PROTON MRI

**DILLON GRICE**

SUPERVISING PROFESSOR: DR. SAMUEL GRANT

Dillon Grice is in his final year of Chemical-Biomedical Engineering. Since last spring he has been working in the National High Magnetic Field Laboratory researching migraines with Dr. Samuel Grant. After graduation, Dillon would like to pursue further research on migraines using MRI techniques involved at the MAGLab and is also interested in obtaining a Ph.D. in Chemical-Biomedical Engineering.

## OUT THERE SERIES

**EMILY MCCULLERS KELLY**

The Scott And Ina McNichols Undergraduate Research Award

SUPERVISING PROFESSOR: PROF. ANNE STAGG

Emily McCullers Kelly, a local to the Tallahassee area, is entering into her second year of the B.A. in Studio Art and is working towards completing the prerequisites for the Master's in Art Education Program. She aspires to be accepted into the limited access B.F.A. Studio Art program this semester. Emily enjoys the process of collecting data and using art as a medium through which to express her findings. She looks forward to a career in engaging children to think critically about how to express ideas through the process of creating art.

## DECREASING SCHOOL BURNOUT AND INCREASING WELLNESS IN THE FLORIDA STATE UNIVERSITY STUDENT BODY

**JOEY LEONARD**

SUPERVISING PROFESSOR: DR. FRANK FINCHAM

Joey Leonard, a Tallahassee native, is a junior Exercise Science major and premedical student. After transferring to Florida State from Tallahassee Community College he was blessed with the opportunity to become a research assistant at the Family Institute. At the Family Institute for the past year he has had the opportunity to work under Dr. Frank Fincham and Dr. Ross May. Joey Leonard is extremely thankful he has been able to assist Dr. Fincham and Dr. May in discovering means to identify and decrease school burnout among the Florida State University student body.

## RAFFAELE SONZOGNO'S LEGACY OF INNOVATION AND SOCIAL PROGRESS

### ANGELA MERCHAN

SUPERVISING PROFESSOR: DR. SILVIA VALISA

Angela Merchan, a Colombian American student, is in her final year of Italian Studies and the BFA in Studio Art. She is currently working on her graduating thesis exhibition and plans to go on to graduate school for both her linguistic and artistic endeavors. Upon graduation, Angela hopes to continue her research on Italian literature and culture while studying and working abroad. Her career goal is to become a professional artist and a scholar of a diversity of languages and cultures.

## pH GATED DNA PHOTO-CLEAVAGE FOR CANCER THERAPY

### JUAN NOGUES

Stephen Madden Undergraduate Research Award

SUPERVISING PROFESSOR: DR. IGOR ALABUGIN

Juan Noguez, a senior Biochemistry major, joined Dr. Alabugin's group his sophomore year while a member of the Undergraduate Research Opportunity Program (UROP). Since then he has worked on DNA photocleavers aimed at targeting cancer cells. After graduation he plans to pursue an MD/PhD and continue research on cancer treatment. It is his life goal to help advance cancer treatment and prevention.

## SEDIMENT ZONATION PATTERNS OF DEEP SEA BENTHIC MACROFAUNA AFTER THE HORIZON OIL SPILL

### MELISSA OLGUIN

SUPERVISING PROFESSOR: DR. AMY BACO-TAYLOR

Melissa Olguin is in her final year of Biological Sciences. As a second year student, she completed the Undergraduate Research Opportunity Program (UROP) in the lab of Dr. Amy Baco-Taylor. She is currently working on her honors thesis at the FSU Coastal and Marine Lab under Dr. Sandra Brooke and will graduate with an additional minor in Environmental Studies. She has always been inspired by the beauty and exploration of the ocean and is passionate about pursuing a career in marine conservation.

## PRESERVING AND PROMOTING UNIVERSITY HISTORY: EXPLORING EMERGING HERITAGE PROGRAMS

### KELLY SCANDONE

The John W. Day III Undergraduate Research Award

SUPERVISING PROFESSOR: DR. TERI ABSTEIN

Kelly Scandone, a Tallahassee native, is a junior studying Art History with a minor in Museum Studies. In addition to her current research under the guidance of Dr. Teri Abstein, Kelly is also continuing the research she began last year as part of the Undergraduate Research Opportunity Program (UROP) with Art Professor Lilian Garcia-Roig for the Art on Campus Initiative. In the coming semesters Kelly will begin working on her honors thesis. Upon graduation, she hopes to obtain a Master's degree in Museum and Cultural Heritage Administration and pursue a career that combines improving museum experiences and promoting cultural heritage education.

## PINNING EFFECTS IN TWO BAND SUPERCONDUCTORS

### CHAD SOCKWELL

SUPERVISING PROFESSOR: DR. MAX GUNZBURGER

Chad Sockwell, a Hosford resident, is in the final semester of his Scientific Computing and Physics majors. He has also completed his honors thesis. Since May of 2014, he has conducted research under Dr. Gunzburger and Dr. Peterson in the Scientific Computing Department. He has an interest in the deep relationship between math and physics. After graduation Chad intends to pursue a Master's degree in Computational Science and continue to obtain a doctorate degree in Physics. His career goal is to conduct research as a theoretical physicist at a research university.



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