

## Application for 2013 Undergraduate Research and Creative Activity Award

### 1. Project Proposal (800 word limit)

Present a plan for a project that you will pursue over the summer. Your proposal should describe the problem to be investigated, the hypothesis to be tested, or the creative endeavor to be undertaken and include a timeline. Describe how you chose your supervising professor and how you expect to work with him/her.

The question I am looking to investigate this summer is whether increased school choice has also increased the amount of racial and economic segregation in schools, particularly in Florida. Our state is a leader in the school choice movement, and was the first state in the nation to pass state-wide school choice legislation in 1999. Many current law makers believe that increasing school choice is the best way to encourage public schools to improve. However, there is a large body of research that suggests that increased school choice oftentimes has the unintended consequence of increasing racial and economic segregation in schools.

My primary hypothesis is that Florida schools are more racially segregated now than they were before school choice legislation was enacted in the state of Florida. In order to figure this out, I will analyze data from the National Center for Education Statistics, and the US Census.

First, I will break down current data for each type of school (public, private, charter, magnet) in each district to see what percentages of each racial group are represented in each school. I will compare this to US census bureau data on the county to see which schools have populations that are over or under representative of the district. Then, I will figure out what percentage of each type of school in each district is racially unbalanced compared to the district averages for school aged children. After doing this for each district, I will figure out what percentages of each types of school are presently racially unbalanced across the entire state. Then, I will repeat the entire process for a year before school choice legislation was enacted, probably 1998.

My secondary hypothesis is that Florida schools are more economically segregated now than they were before school choice legislation was enacted in Florida. In order to figure this out, I will compare the percentages of students receiving free or reduced cost lunch in a school to the poverty level in the district it is located in. A school that has a population that has a significantly larger or smaller percentage of students receiving free or reduced lunch than the poverty level in the district will be considered economically segregated. I will figure out what percent of each type of school in each district is economically segregated, and then I will also expand those figures to the entire state of Florida. Finally, I will repeat the entire process for a year before school choice legislation was enacted.

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With both of these hypotheses, my goals are to see which percentages of charter, magnet, private, and traditional public schools are segregated in each district, as well as across Florida currently, and before school choice legislation was enacted. This will enable me to see which types of schools tend to be most segregated, and whether schools have become more or less segregated since school choice legislation was enacted. This is an important consideration that needs to be made when deciding whether to further increase school choice options. Currently, the data that has been collected suggests that school choice has increased the levels of segregation in schools, but there is little information about the state of Florida in particular. I am seeking to fill this gap in the research, in order to be able to further the information on school choice in this state.

I chose my supervising professor, Dr. Carol Weissert, on the recommendations of another professor in the political science department. She is a well renowned faculty member in my department, as well as the director of the LeRoy Collins Institute for Public Policy. She has extensive experience in researching public policy, and I will be able to get advice from her on ways to improve my research. The institute that Dr. Weissert directs is currently thinking about adopting school choice as a topic of research, so my particular research is of great interest to her.

In my current timeline, I plan to spend the first two weeks going through the literature in this area in order to draw inspiration to improve my research methods. I will then use the statistical program Stata to break down racial and socioeconomic data on a district by district level with the methodology outlined earlier. First with a current year, and then from a year before school choice legislation was enacted. I will then use Stata to attempt to falsify my hypothesis. When I have analyzed all of the appropriate data, I will create a poster presentation outlining my findings.

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### 2. PERSONAL STATEMENT (500 word limit)

Please describe how you became interested in this topic and any experiences that you believe have prepared you to undertake this project. You should also discuss how your research project relates to your graduate school, professional school, or career goals.

I have always been passionate about education equality. I believe that public education should serve to make sure that all children are on an equal playing field, no matter what their socioeconomic status is. Unfortunately, I believe that oftentimes students who come from privileged backgrounds tend to get more opportunities from the public education system than students who are less well-off. Since coming to Florida State I've been involved in educational activism, and advocating for access to higher education. This year I'm the director of the Center for Participant Education, which is a Student Government Association bureau that encourages students to become participants in their own education, by offering a space where students and members of the Tallahassee community can teach free classes.

Last semester, I took an honors seminar on Educational Inequality and School Reform, which is when I really became interested in the issue of school choice and segregation. The research that I would like to do this summer is based on my final paper for that class, which was on charter schools and racial segregation in Broward, Miami-Dade, and Leon counties. My results were inconclusive, which is why I am interested in expanding my research this summer.

I am also currently pursuing the Research Intensive Bachelor Certificate, which is a program in the political science department that teaches undergraduates how to conduct independent research. Through this program, I have learned how to use the statistical program Stata to analyze data, and this semester I am learning how to design my own research projects. This will allow me to properly conduct research this summer, since I will already know how to correctly design a good social science research project.

This research project relates significantly with my plans for the future. I actually intend to use the results of the research that I conduct this summer as part of an honors thesis on school choice. After I finish my undergraduate degree, I currently plan to go to graduate school to pursue a Ph.D. in political science, particularly focusing on education policy. I think that education is the only way to increase equality in our country, and I plan to spend my career working towards improving education in the United States.

Daniel Eduardo Ruiz  
URCAA/MRCE Application

Project Proposal (543 words)

During this coming summer semester, I wish to work on translating poetry from English into Spanish and from Spanish into English. The first six weeks of the summer, under the supervision of Dr. James Kimbrell and Dr. Juan Carlos Galeano, both of whom have experience translating poetry, I will work on reading and translating the works of major Latin-American poets like Pablo Neruda, Gabriela Mistral, Octavio Paz, and Jorge Luis Borges (among others); in addition, I also plan to translate the poems of many English language poets—Frank O’Hara, William Carlos Williams, Kenneth Koch, and Walt Whitman (also among others)—into Spanish. These initial translations will provide a foundation for the work I will do in the latter half of the summer.

During summer C, I will then work on translating my own poems from English into Spanish. These poems will contribute to my current honors in the major project, which is a book-length collection of poetry entitled *Reasons for the Dark to Be Afraid*. Both Dr. Kimbrell and Dr. Galeano are serving on my thesis committee. In the second half of summer, I will also be meeting with Dr. David Kirby, the supervising professor on my committee, and Professor Barbara Hamby, who is also on my committee, to work on constructing many of the poems that will contribute to my honors thesis and which I will translate. I chose Dr. Kirby as my supervising professor because, after only one semester of writing poetry seriously, he edited and critiqued my poems; his supervision prompted my revisions, which eventually won me the department award in poetry last year. After writing these poems and receiving feedback on them from Dr. Kirby and Professor Hamby, I will translate these poems into Spanish by myself. Then, I will consult Dr. Kimbrell and Dr. Galeano to receive feedback and criticism on the translations.

By the end of the summer, I will have not only translated the major works of many of the most famous poets in the world, but I will have gained the skills necessary to translate my own poems into my native language. This attention and acute observation of language differences would inspire the new poems that would contribute to my honors thesis and improve my overall writing skills in both English and Spanish. These translations take long hours of sifting through dictionaries and interpreting the poems I wish to translate, emphasizing context over diction, meaning that I will aim to accurately portray the meaning behind the poems, not just word-for-word accounts of them. This grant would enable me to take a summer off from my job at Barnes & Noble and still live in Tallahassee—allowing me to meet regularly with all four professors on my committee—and would allow me to purchase copies of the collected or selected poems of numerous writers (some of whom I mentioned above). Because work in translation lasts for countless hours, and because the writing of my poems themselves also takes a long time, having a summer devoted to the writing and translating of the poems would grant me the necessary time

to improve my skills as a writer and give my work my full attention, which, in turn, would improve the overall quality of my honors thesis project.

#### Personal Statement (479 words)

Professor Erin Belieu once told me that all of my poems are manifestos in their own way. A manifesto declares publicly the intentions, motives, and views of its issuer, which means that all of my poems intend to reveal my identity through my own poetic persona. The issue of identity is central in my poems; however, my identity outside of my poems remains conflicted. Born in Bayamon, Puerto Rico, where Spanish is the dominant language, I moved to the United States shortly after my first birthday. After gaining fluency in Spanish, I went to elementary school in Florida, where I was forced to focus my attention on the English language. As a result, I no longer speak Spanish fluently, which has always made me a foreigner to my own culture. Translating poems from English to Spanish and Spanish to English, with the help of my professors, will give me a head start into relearning Spanish, reclaiming the culture I have lost, and understanding the other side of my identity. In addition, this understanding of my identity will also inspire me to write more poems, which will contribute to my thesis.

I believe that I am ready to take on this project because I have already worked with my supervising professor, Dr. Kirby, for over a year. As far as the poems, I know that I will produce good work, or, at the very least, work that has potential—with the help of Dr. Kirby, Professor Hamby, Dr. Galeano, and Dr. Kimbrell—to be good. Last year, I won the Literati Poetry Award, FSU's undergraduate department award in poetry; this year, I was a finalist for *The Kudzu Review's* Fall Poetry Contest. In addition, I have published some of my poems in national magazines.

I want to be a poet and a professor of poetry for the rest of my life. This project will help prepare me for the work I will eventually do at the graduate level. After graduation, I plan on pursuing a Master of Fine Arts degree in poetry; then, I wish to work on my Ph.D. in Poetry and 20<sup>th</sup> Century American Literature. Both of these degrees, along with my current progress towards a Bachelors degree in Creative Writing, will enable me to earn a job as an associate professor, where I will eventually work and publish enough to gain tenure. Not only do I want to work hard enough to be a significant poet, I want my students to be great poets as well. My experience with this project will enable me to better understand myself, which will improve the poems that I will include in the manuscripts I send to graduate schools, propelling me in my own dreams, and will help me improve as a person, making me a better role model for the students I wish to see achieve their own greatness someday.

The Oxford Movement and 19th Century Information Networks

Part I: Proposal

The Oxford Movement began as scholarly discourse within the rarified halls of Oxford University, but quickly escalated into a nationwide phenomenon. Much historical analysis has been devoted to the leaders of the movement and the brand of “Anglo-Catholic” theology they created, yet major questions remain incompletely answered. In a country where anti-Catholic sentiment was high, how did a movement that emphasized Catholicism succeed on a national scale? How did a High-Church initiative so successfully penetrate England’s socio-demographic boundaries? Outside of its theological claims, how and why did this unlikely phenomenon actually work? My research aims to address these questions through the textual medium in which the Oxford Movement presented its central arguments.

To undertake this research I will explore the printed tracts, books, sermons and correspondence that comprised the material transactions of the Oxford Movement. The original prints of these documents along with the unpublished correspondence from regional leaders of the movement to the central leaders are held at the Pusey House and Keble College Library at the University of Oxford. By analyzing the mediums of the Oxford Movement my research will advance the understanding of how early Victorian information networks were being created and utilized while also contributing to field conversations in both Victorian Studies and Religious History.

By 1833, when the Oxford Movement began, a major technological revolution was well under way. The telegraph and steam powered printing press were transforming the way information was disseminated and received. My research argues that the Oxford Movement was successful due to an awareness of these new networks. This “High-Church” movement embraced the tract, a “low” form of cheap, ephemeral print, leading many to label the Oxford Movement leaders as “Tractarians”. However, unlike other organizations at the time who would only print one type of publication, the Oxford Movement utilized numerous mediums. Among Oxford Movement publications were quarterly journals,

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collected and bound editions of sermons, poetry, and church histories. Modern versions of these works have altered many aspects of the original form in order to make the content more easily readable to the modern audience. For my research, engagement with the original texts is central to analyze how they were distributed and received in the early 19<sup>th</sup> century.

My research will consist of two parts, both to be undertaken in Oxford at the archives held in the Pusey House and Keble College Library. The first part will be an examination of the correspondence among Oxford Movement leaders. How did they consciously develop their message? How did they select which mediums would transport particular messages? Specifically, I will focus on their discussions of audience in relation to medium and how John Henry Newman, the movement's primary leader and editor, chose arguments to fit particular mediums. The Pusey House holds a number of different collections; this portion of the research will primarily analyze three of them: the Churton Papers, the Greseley Papers and the Hamilton Papers. These papers document the correspondence and personal writings of lesser known Oxford Movement leaders from Yorkshire, Lichfield, and Salisbury. Since these communities differed widely, I will be examining the correspondence between these leaders and Newman to see if certain mediums were more effective in different geographic areas.

The second part of my research will deal with the publications themselves. Naturally the different mediums targeted different audiences, but in order to determine how effective each publication was at disseminating itself, a close study of how content interacted with form must be undertaken. In order to measure the effectiveness of particular publications, I've obtained the complete correspondence between Newman and his publisher Francis Rivington. Within, Rivington gives Newman the numbers of each publication sold and requests permission to print more of publications he believes will sell. Using this data, I will analyze the textual form of the most popular and least popular publications in order to determine why they were or were not successful. Special attention will be paid

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to aspects such as price, advertisements within the publications, the narrative style of the publication, and subject matter.

Assisting me while I am in Oxford will be the archivists of the Pusey House and Keble Library: Fr. Barry Orford and Mr. Robert Petre, with whom I have already made contact. They have already helped me pin down specific texts and correspondence that are relevant to my research and will continue to do so while I am there. Supervising my research will be Dr. Paul Fyfe, Assistant Professor of English and History of Text Technologies. Dr. Fyfe is a specialist in Victorian literature and print culture. Through weekly Skype sessions Dr. Fyfe will help guide my methodology and analysis. Ultimately, this research will be used in my Honors Thesis, chaired by Dr. Fyfe, and will be presentable at conferences such as the ACC Meeting of the Minds.

Part II: Personal Statement

Although I am a History student, my research interests and work are very interdisciplinary and this particular project is no exception. Since the fall semester of 2012 I have been working with Dr. Fyfe on his book project about "Victorian Telecommunication". This work sparked my interest in print culture and textual study and prepared me for a project that combines this textual approach with standard historical methods. With Dr. Fyfe, I analyzed how specific texts circulated in mid-Victorian Britain and how the author made particular editorial changes to fit the nature of the textual medium his work was published in. Significant changes were made between publication in a monthly periodical and publication in a bounded, collected edition.

On the historical side, during my "Britain 1714-1870" class with Dr. Charles Upchurch, I wrote a paper which investigated how Briton's used the Oxford Movement as a way of national identity building in the face of an economic and cultural crisis. That project involved a study of John Henry Newman's

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autobiography, much of his correspondence, and the Evangelical reaction against the Oxford Movement.

Additionally, as a self-identifying Anglo-Catholic, study of the Oxford Movement is important to me on a personal level as well. My church in Omaha, Nebraska was founded as an Oxford Movement parish in 1869 and itself provides an interesting case study for how communication networks developed and expanded. In my Honors thesis, I aim to discover how the networks created in the early years of the Oxford Movement expanded during the rest of the 19<sup>th</sup> century throughout Britain and into America.

As I prepare for graduate school, the interdisciplinary nature of this project is especially important. I'm planning to either go on and do graduate work in British History or possibly seek ordination within the Anglican Church. While I'm unclear right now as to my calling within the church, a possibility for ordination and a graduate degree in history is very appealing to me. The research I undertake in this project will aid me in preparation for graduate studies in history and spending time immersed in the Anglo-Catholic culture of the Pusey House will help me to more clearly discern whether or not a priestly vocation is right for me.

This interdisciplinary project will not only contribute to many different fields of scholarship such as Victorian studies, religious history and media history, but will also aid me as I endeavor to determine more precisely what my future plans for graduate school are. By understanding the way that the Oxford Movement marketed itself and made itself relevant in an increasingly anti-Catholic and secular world, I can help make that same argument for the Anglican Church today as it struggles to define itself.

## Project Proposal

A key step in the Biochemical Platform of the Biomass to Fuels (or chemicals) Process being developed by the Department of Energy is the hydrolysis of cellulose to glucose through fungal cellulases. This key step must occur prior to the fermentation of glucose to ethanol or other products by microbial biocatalysts. Major cellulase (enzymes) producers, such as Novozymes, estimate the cost of fungal cellulases to be approximately \$0.50 per gallon of cellulosic ethanol produced, about 40 to 100 times higher than the enzyme cost in the starch to ethanol process. Seeing that the price of enzymes is about 25% of the total cost of cellulosic ethanol production, new strategies for reducing enzyme loading are required before cellulosic ethanol can become cost-competitive with gasoline.

Previous work by the Biofuels Research Group in the Department of Chemical and Biomedical Engineering has identified a novel solvent, N-methyl morpholine oxide (NMMO), for biomass treatment. Employment of the solvent results in enhanced enzymatic hydrolysis rates and product yield. As a result, this is a very promising development that, when coupled with fermentation, will result in an economic process for biofuels production. The missing link in the work is a lack of fundamental understanding of how enzymes break down NMMO treated biomass, as this will aid in developing reactors aimed to produce biofuels. Thus, the main focus of my summer work is carrying out experiments that will aid in developing this fundamental understanding.

Throughout the enzymatic process of producing sugars through hydrolysis, many steps are believed to occur. The first step involves the process of adsorbing the enzymes onto the cellulose surface. Seeing that this occurs at the molecular level and that only nanogram amounts of enzyme are adsorbed, it can prove to be quite difficult to measure both the kinetics as well as the amount of enzymatic material adsorbed. Additionally, once the required enzyme is adsorbed onto the cellulose surface, the enzyme proceeds to bond with the individual cellulose structures. In doing so, the enzyme is thus able to assist in carrying out the hydrolysis reaction. As with the adsorption process, it can prove to be very difficult to measure the amount of enzyme that bonded to the individual cellulose molecules, for just because the enzyme bonds to the cellulose does not indicate that it is in a reactive state. Consequently, a device that has the ability to directly measure the nanogram amount of enzyme adsorbed onto a cellulose surface as well the amount of enzyme that proceeded to bond to cellulose molecules can prove invaluable in regards to this field of study. A device that has this potential and which will be used in this work is a quartz crystal microbalance (QCM). The experiments I will be performing using a QCM are outlined below.

1. Preparation of cellulose thin films: I will learn how to prepare cellulose thin films on a quartz crystal surface so that it can be used in a QCM. Seeing that this is a crucial step in starting the research, this will prove to be a heavy focus in the beginning portion of my summer work. I will treat cellulose with NMMO and work on procedures to coat crystals with the pretreated cellulose.
2. Enzymatic hydrolysis of cellulose thin films using QCM:
  - a. The effect of enzyme concentration on the rate of hydrolysis: It has been determined that the addition of extra enzyme to the solution increases the yield of sugars; however, it is not yet certain that this correlation is linear. Hence, it is my goal to determine this effect in the course of my summer work.
  - b. The effect of inhibition or deactivation on the overall hydrolysis process: It is known in literature that glucose formed in hydrolysis inhibits the enzyme from further

hydrolysis of cellulose. Experiments will be performed using QCM with varying amounts of glucose added to the enzyme mixture to study the effect of glucose concentration on rates and yields of subsequent reactions.

- c. The effect of solvent concentration (NMMO) on the rate of hydrolysis: A hypothesis in the Biofuels group is that certain amounts of NMMO if present in the pretreated biomass will aid in the hydrolysis reactions due its effect on cellulose structure. Moreover, it also reduces the amount of water used in washing process resulting in a more economical process. Hence the focus of this aim would be to run experiments using a QCM in which controlled amounts of the solvent NMMO will be added to the enzymes to see the effect of solvent on the hydrolysis reactions. This has not been studied till date.

Additionally, following my summer work I plan to pursue involvement in the Honors Thesis Program, employing my Summer findings throughout the research group to carry out further experimentations in the subsequent Fall and Spring semesters.

## **Personal Statement**

Throughout my academic career, the most important lesson that I have learned is that one should never set a limitation on their goals. In doing so, one not only discourages themselves; one also diminishes the ambitions that fuel their drive to attain their dreams. In regards to my personal goals, I hope to one day have an influence on revolutionizing the means through which our society attains their energy supplies. It is for this reason that I am so excited to get involved in Undergraduate Research. Through my involvement with Undergraduate Research, I will be taking one additional step to achieving my goals. In participating in an undergraduate research project, I believe that one must have acquired certain traits to achieve their research goals successfully; and I believe that my time in Marching Band immensely assisted me in attaining these attributes.

As a part of the Florida State University Marching Chiefs, not only did I commit myself to an experience that I will cherish, I also learned the skills necessary to achieve my goals. In the band, one learns many forms of discipline, trust, and time management. Throughout life, I believe that these three attributes are key to being happy and ultimately, successful. First and foremost, as a member of the Marching Chiefs, one learns discipline through the many tasks they are presented. For example, when learning a new sheet of music, one must have a mindset that is disciplined enough to follow the conductor, as well as read the music and translate it to the varying valves or keys on their respective instrument. Additionally, forms of trust come from all angles, as one must have trust in the other members that they have memorized their music and drill, so that the show can go smoothly. Moreover, one obtains a sense of time management throughout their time in the marching band. Seeing that one commits on average three hours each day of the week, as well as an entire day for home football games, one must become proficient at managing their time to keep up with their studies. Thus, one is forced to learn time management skills if they are to successfully balance school with their involvement in the Marching Chiefs. In regards to these aforementioned attributes, one finds that they are easily transferable to other aspects of life, the most important of which, in my opinion, being school.

Furthermore, it is a direct result of these attributes that I have come to believe that pursuing Undergraduate Research is a task that I am more than capable of accomplishing. Throughout these three attributes I believe that I will have the skills necessary to successfully manage both school and research. Also, in pursuing this project, I am taking a crucial step in my goal to revolutionize the process in which we accrue energy from our surroundings. This research topic is something I wish to carry on into Graduate School as well as in any future research endeavors I undertake.

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### 1. Project Proposal (800 word limit)

Previous studies have shown that deletion of the genes encoding the Kv1.3 potassium ion channel in mice (thus producing knock-out, or KO, mice) results in heightened olfaction, resistance to obesity, and increased metabolism. While performing memory tests on KO mice, I observed they also mimic the hyperactive behavioral phenotype seen in animal models of attention deficit/ hyperactivity disorder (ADHD). Based on this observation and the fact that a wholly representative animal model of the ADHD diagnosis has yet to be discovered, my research seeks to determine whether KO mice are suitable behavioral models of the ADHD phenotype and, if so, whether their hyperactive behavior can be corrected with methylphenidate treatment.

Because ADHD is often associated with increased anxiety, the anxiety levels of KO mice as compared to wildtype (WT) mice were analyzed as a preliminary survey for the possession of additional ADHD-type behaviors in the fall of 2012 and the spring of 2013. Though the KO mice mimic the hyperactivity seen in ADHD, a relation has also been found between decreased olfactory abilities and increased anxiety. It was thus hypothesized that the KO mice would have equal or decreased anxiety levels as compared to their WT counterparts due to their superior olfactory abilities. Anxiety levels were determined using three manual behavior screens: the marble burying test, the elevated plus maze, and the light/dark box. In the marble burying test, mice were placed in a cage containing bedding and a grid of marbles; the number of marbles buried over 30 minutes was measured. In the elevated plus maze, mice were placed in the center of a cross-shaped maze with two enclosed arms and two open arms. The mice were free to enter and exit the arms for a five minute period while the amount of time spent in each arm was measured. The light/dark box experiment involved placing mice in a box containing a white and a black chamber separated by a black divider. The divider contained a small opening, thus allowing the mice to enter and exit the chambers during a five minute period while the amount of time spent in each chamber was recorded. The number of marbles buried, the amount of time spent in the enclosed arms, and the amount of time spent in the dark chamber are positively correlated with increased anxiety.

After determining the anxiety levels of the KO mice, I will quantify their hyperactive behaviors through the use of metabolic chamber analysis and a modified object-memory test in the spring and fall of 2013. Metabolic chamber analysis involves placing a mouse in a cage equipped with a motion-sensitive infrared laser, thus enabling the differences in locomotor activity between KO and WT mice to be recorded. Because the instrument is sealed, an indirect measure of calorimetry will also be made and used to compute basal metabolic rate and ingestive behaviors. The modified memory test is a technique developed by me and my faculty advisor and involves placing a mouse and several plastic toys in a large test cage. The mouse is free to interact with the toys for a five minute period while the amount of time spent focusing on the toys is recorded and used to indicate attention span.

In the final stage of my research, the mice will be subjected to treatment with methylphenidate in the fall of 2013 and spring of 2014. Because KO mice appear to mimic the behavioral phenotype seen in ADHD animal models, I expect treatment will result in the decreased locomotor activity and increased attention span observed in ADHD mice models treated with this drug. The metabolic chamber and attention-span tests will be repeated post-treatment and the results will be compared to the pre-treatment results as well as to results from published literature to determine whether methylphenidate has a noticeable effect on

Carlie Hoffman  
Spring 2013

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behavior. If WT behavior patterns are generated through the treatment, it will be concluded that KO mice are suitable behavioral models of ADHD.

This research is being performed under the guidance of Dr. Debra Ann Fadool in the Biological Science department. Because I developed the idea for this project while performing behavioral testing in Dr. Fadool's lab in the spring of 2012, she is the supervising professor for my research. Dr. Fadool has helped me choose which tests to use to measure the anxiety and hyperactivity levels of the mice and has also helped connect me with other professors in the biology department and medical school who possess equipment I will need to use. She has provided me with WT and KO mice on which to perform my anxiety and behavioral tests and will also advise me while I gather, analyze, and prepare to present my findings for my honors thesis defense as well as for biological conventions and competitions.

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2. PERSONAL STATEMENT (500 word limit)

My interest in neurological research stems from the fact that I come from a family with a history of mental illness: my father has ADHD and bipolar disorder while my brother has microcephaly. My desire to learn what causes the abnormal psychological conditions within my own family drove me to study science and influenced my decision to become involved with research. I desire to impact neurological research and treatment through the course of my career and ultimately aim to better the lives of individuals with mental disorders. Because of this desire, I was intrigued when the KO mice appeared to express ADHD-type symptoms and am excited to be performing research that could later aid people diagnosed with ADHD.

By completing a directed independent study course in Dr. Fadool's laboratory before beginning this project, I was able to gain experiences that have proven to be invaluable in enacting my current research. When I first began researching with Dr. Fadool, I phenotyped WT and KO mice subjected to alterations in diet. I used a Knosys olfactometer to test odor discrimination and thresholds of mice and also retrieved, weighed, and ran the mice through three stages of operant conditioning. I monitored mouse body weights, managed water deprivation schedules, and fed the mice modified diets on the weekends. I also generated graphs of the data and helped create and present a poster representing our work at a local competition. My familiarity with weighing and handling mice, setting up and monitoring experimental apparatuses, performing behavioral screens, and analyzing and presenting data directly parallels the independent work I am now performing and has greatly expedited my researching process thus far.

I later assisted Dr. Fadool with mouse husbandry and observed and aided in pairing mice for breeding, separating mothers and pups, and labeling cages with breeding updates. By learning how to maintain and breed mice, I was able to more closely assist Dr. Fadool as we bred and raised the mice I will use for my behavioral experiments. Additionally, I was involved with performing glucose injections and taking fasting plasma glucose levels using tail biopsy, thus giving me experience in administering solutions via syringe. Overall, my initial experiences with behavioral experiments, preparing and presenting research, mouse maintenance, and injections have been highly influential in preparing me to perform anxiety and hyperactive tests, administer methylphenidate treatments, and present my data upon completion of my research.

After completing my undergraduate education, I will obtain a Ph.D. in neuroscience and will then further develop my writing, oral, and grant submitting skills through a postdoctoral fellowship or a teaching position. My ultimate goal is either to work in neuropharmacology industry and research neural drugs and their physiological responses, or to conduct research and teach biology courses in a university setting. By evaluating methylphenidate drug treatments and examining the effects of psychological disorders on behavior, I am gaining direct experience in the field I plan on pursuing and am thus excited to perform research on potential ADHD model mice.

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With an interdisciplinary background in Theatre, Museum Studies, and Anthropology, I will investigate the convergence of the museum and the theatre spaces to propose ways of enlivening traditional modes of engagement with cultural institutions. What prevents museums from becoming cultural cemeteries is a promise of a live encounter with something of essential value to the visitor as a living human. I have observed through my experiences and studies that the trend of performance in museums is becoming increasingly popular. Performance encompasses live interactions between performers and audience members, ranging from reenactments to live human installations. To better understand the motivation for this phenomenon, I will examine it from two viewpoints: that of the museum and that of the performer. Through the lens of Museum Anthropology, I will work in an unpaid internship at Mission San Luis for the duration of the summer and, conduct a visit to the National Museum of the American Indian. Simultaneously, I will conduct performance research with a group of five actors, culminating in a museum performance at the Ringling Museum. With the URCAA, I will be able to fully investigate performance in museums, and how it affects accessibility to the culture and thus human identity.

Mission San Luis is my ideal location for researching the museum's motivation in bringing performance to enhance cultural availability, as the institution conducts reenactments and is a site of paramount importance located in our state's capital city.

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From the months of June to August, I will observe, conduct interviews, and compile data as a member of the museum community. Concurrently, as preliminary research for the performance portion of my course of action and as an ethnographic institution with which to compare Floridian museums, in May, I will undertake a research venture to the Smithsonian's National Museum of the American Indian in Washington, D.C. This is a unique anthropological museum with regular performances and guides who have relationships with the ethnographic objects. Later in the month of May and to the end of July, I will rehearse with my group of five performers to devise a piece of theatre that brings a cultural component of the Ringling Museum to life. We will meet on the weekends, and travel to museums throughout the state in order to gather a range of museum experiences and cultural inspiration, from which I will create prompts for performance in rehearsals. I will use these actors as research tools, from which I will document discussion and physical exploration as to why performers are motivated to perform in museums and bring cultural heritage to life. Our final goal is to perform a piece inspired by a specific location in the Ringling, a practice known as site specific theatre, and also as a part of the Tallahassee Summer Performance Kitchen. After both performances I will gather data from the audience to analyze the effect. My mentor is working with me to gain permission to perform at the Ringling from Dr. Matthew McLendon, a FSU graduate, and the Curator of Modern Art.

My research here in Florida will catalyze my further investigation of the topic for my thesis, which will be defended in the Spring of 2014. I strive to blend the lines that compartmentalize areas that study human identity. My mentor, Dr. Kris Salata, shares this idea, and is my ideal supervising professor due to his extensive knowledge on

## Application for 2013 Undergraduate Research and Creative Activity Award

research as performance and the ideas of theatre anthropology. Dr. Salata will guide me in choice of texts, discuss the effects of simultaneous research from both perspectives, and attend rehearsals when his schedule will allow. Dr. Salata has a joint Ph.D. in Drama and the Humanities, and therefore has experience with interdisciplinary research. Dr. Salata has worked to de-compartmentalize theatre from other areas of study, which is one of the goals of my own research. I will be further advised by Dr. Lauren Weingarden, a professor of FSU's Museum Studies program, and Dr. Joseph Hellweg, a courtesy associate professor of Anthropology.

Florida State University has acknowledged the implications of bringing together disciplines that creatively endeavor to study humanity and is striving to explore interaction between the arts with its remodeling project that plans to create an arts corner of campus. Enlivening traditional modes of engagement with cultural institutions is necessary to maintain accessibility to human identity in the present and future. Merging the institutions of theatre and museums creates the opportunity for more success in reaching out to the general public, but also brings minds together that have similar objectives of studying human identity, cross fertilization which will enhance success. Culture has a never-ending impact on humanity, and it is the responsibility of the fields of Anthropology, Museums, and Theatre to study, guard, and guide identity. The lines between these fields need to be blurred, and I will accomplish it.

## Application for 2013 Undergraduate Research and Creative Activity Award

### 2. PERSONAL STATEMENT (500 word limit)

Please describe how you became interested in this topic and any experiences that you believe have prepared you to undertake this project. You should also discuss how your research project relates to your graduate school, professional school, or career goals.

I am a hard working student, scholar, and artist. In every class, and in every creative endeavor I take on, I try to equally challenge my level of critical thinking and creative reimagining. I am especially adept for this particular subject of research because of my interdisciplinary background in Theatre, Anthropology, and Museum Studies. This background gives me multiple lenses through which to view the situation, and an overall understanding of different schools of thought when it comes to approaching the topic of performance in museums.

I am a high achieving individual who works beyond expectations for every project that I explore. I will have no trouble balancing the two courses of research that I will pursue this summer, as I have balanced the research of coursework with the research of creative projects for the entirety of my university education, which has positively impacted my academic and creative endeavors. A direct example of this combination is when I wrote a monologue to be performed for the School of Theatre's Social Issues project based upon interviews from Max Beck, an intersex that I researched as a part of my Sex and Gender Roles Cross anthropology class.

The research that I am addressing is important everywhere, but I wish to investigate it first in Florida. I have been well prepared for the task by Florida State University both on its home campus and abroad, with the support of University scholarships. I studied, experienced, and compared a vast variety of museums and theatre

## Application for 2013 Undergraduate Research and Creative Activity Award

in Paris and London this past summer and fall. Three particularly striking experiences abroad inspired me to conduct this interdisciplinary research. These include speaking to an elderly French woman about the Moulin Galette in an Atget photography exhibit at the *Musée Carnavalet in Paris*, seeing Staniewski's "anthropological theatre" in Gardzienice, Poland, and witnessing collaboration between the Royal Ballet and the National Gallery in London brought to life in the exhibit "Metamorphosis 2012".

We usually think of research and of creative activities as separate undertakings, but I think of myself as a creative researcher. I take my research and apply it to creative outlets, working to share it immediately with the community. Additionally, I use my creative abilities to ask research questions not limited to a single field, or I begin with an artistic project and then pursue the academic questions it inspires. Research in the arts, and through the arts, is my life's passion. I will be an Undergraduate Research Opportunity Program Leader next year, and I wish to have detailed experiences in this type of research in order to guide future Seminoles who have similar aspirations. The results of the project I propose will not only affect the community, but also my future work, as I strive to continue this research in my Honors in the Major Thesis that I will defend Spring 2014. Research is a continuous process, and I will make discoveries this summer and upcoming year that I will further investigate as a graduate theatre student.

Application for 2013 Undergraduate Research and Creative Activity Award

Olivia Katherine Gruder  
Undergraduate Research and Creative Activity Award  
Mentored Research and Creative Endeavors Award

“Zymosan Fungal Infection Induces Nucleosome Distributions During the Innate Immune Response on a Time Dependent Manner”

**Background**

For years, the focus of DNA research has been on the underlying base pair sequence and the proteins those genes may yield. However, the importance of DNA organization and the factors that alter this DNA and protein complex have recently begun to gain recognition. With the advent of recent epigenetic technologies and techniques, a deeper view into the actual dynamics of the organization of DNA is beginning to surface. Chromatin structure plays a critical role in the regulation of the human genome, yet the current understanding of DNA organization is limited. Chromatin is the assortment of DNA and proteins, which together perform the remarkable feat of packaging an exceptionally large amount of genetic material in an infinitesimally small nucleus of a cell. In cells, outside stimuli can induce nucleosome occupancy changes, which have a relationship with gene expression. I will use a fungal stimulus called Zymosan to induce potential alterations in nucleosome positioning. I will observe the organization of DNA at multiple time points to elucidate the kinetics of this drug, and determine if and how nucleosome occupancy is changed on a time dependant manner. This experiment will be carried out in Dr. Jonathan Dennis' laboratory, where I have had the pleasure of working for the past two years.

**Purpose**

An understanding of the role of chromatin structure and its relationship to gene regulation is critical to developing new strategies to prevent and treat diseases. Not only will this experiment aid in the clarification of how Zymosan functions to alter gene expression, but it will also begin to provide a new foundation for basic fundamental biology in a subject that has been grossly untouched by academia.

**Hypothesis**

I predict all cells have the same nucleosome distributions during their resting states. Upon an environmental stimulus, a biochemical “yawn” occurs to provide accessibility to genes needed to illicit a response. This data will support previous findings that various stimuli cause nucleosome distribution changes that are rapid, widespread and transient. I predict the greatest changes in nucleosome positioning will be from 20' - 60'. After 60', I predict the alterations in nucleosome distribution will revert back to their original positions before the stimulus occurred.

**Experimental Design and Aims**

Stimulation of cells by a viral, fungal, or bacterial infection can trigger the movement of nucleosomes, thereby potentially altering gene expression. I chose to investigate the anti-inflammatory response of human macrophage like cell line (THP1) to a fungus. I plan to stimulate cells with a drug called Zymosan, a component the fungal cell wall that induces an innate immune response. Upon zymosan stimulation, we hypothesize that the fungal infection will initiate an inflammatory response by altering nucleosome redistribution and/or alter chromatin structure in a time dependent manner. We will test ten time points at high temporal resolution. I will stop the treatments at their designated time and purify the DNA from the THP1 cells. Prior to purification, the DNA will be cut internucleosomally with an enzyme called

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Micrococcal Nuclease. This enables the isolation of mononucleosomally protected DNA. We will measure nucleosome distribution at each of these time points at hundreds of genes transcription start sites involved in the immune response. This is possible with the aid of gene-tiling microarray technology. I will use a custom-designed 12-plex microarray from NimbleGen that contains base pairs centered around transcription start sites of immunity related genes. The microarray is scanned by the computer, which will generate a readout that can be further analyzed with bioinformatics. Our goal is to identify nucleosome distribution changes in the innate immune response to fungal infection.

**Time Line**

**May 2013**

- Begin growing THP1 cell line
- Split cells, change media
- Treat cells with Zymosan, stop treatment at 0 (control), 20', 40', 60', 80', 100', 2h, 3h, 4h and 12h
- Crosslink

**June 2013**

- Cut with 8 units of Micrococcal Nuclease
- DNA isolation
- Determine DNA concentration with the NanoDrop
- Run an analytical gel

**July 2013**

- Run a preparative gel
- Electroelute
- Run microarray

**August 2013**

- Statistically analyze data
- Gather final results and conclusions

**Previous Experience**

Since my freshman year, I have had the great fortune to work in Dr. Dennis' laboratory and carry out my own projects. Dr. Dennis provides a unique and rare experience for undergraduate students. He provides them with the freedom to design and perform experiments on their own, while still maintaining a presence in the lab to provide insight, answer questions and aid with problems. I have presented my research in poster competitions as well as presentations. I have presented on campus at the undergraduate research symposium and the Tri-Beta annual competition, at which I placed in the top five. I then traveled to Puerto Rico to compete in the national competition and received honorable mention for my presentation.

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**Personal Statement**

Bug collections, ant farms, and formaldehyde jars filled with deceased animals are typically not present in the bedrooms of most eight-year-old girls. During my childhood, my window seat was stacked with aquariums containing snakes, lizards and a plethora of other organisms. I am fortunate enough to have parents that fostered my innate and sometimes eccentric interests in the sciences. As I entered high school, my love of animals and science in general gravitated towards a love of medicine and helping people. Upon continuing along this pre-medical path in college, but something unexpected and completely unplanned has etched itself as a significant part of my life. That something has been research. Never in my life have I participated in something so rigorous, challenging and frustrating, but at the same time is absolutely captivating and magnetic. To this day, I am amazed at not only what scientists have accomplish in the last few centuries, but also, I am amazed at how much we do not know. I have an unquenchable desire to learn and discover, which I demonstrate with not only my coursework, but also with my dedication to research.

Participating in undergraduate research has been a priceless experience for me. Not only has it enabled me to grow and mature as a student, but also, it has exponentially increased my thirst for science. Every day I study in my lab I learn something new. These valuable nuggets of knowledge that I glean each day vary from learning the nuts and bolts of how a laboratory works, to gaining a more substantial understanding of fundamental biology. I have had multiple opportunities to present my research, which enabled me to solidify what I have spent hours working on in the laboratory, and gain thoughtful insights from others about my work. My research experiences have provided with me invaluable skills that will be useful in multiple facets of my life.

In addition to my research, I have held numerous leadership positions outside of the laboratory. I created a new registered student organization on campus called The Dance Project at FSU, which enables members to teach dance classes for free to underserved kids in Leon County. I am an assistant biological science teacher and tutor. In my sorority, Chi Omega, I serve as Scholarship Chair. In the fall, I will be an Undergraduate Research Opportunity Program leader. My undergraduate leadership paired with the education from classes and research provide me with a solid foundation for my future as a scientist. I aspire to become a physician and engage in clinical research. The invaluable time I spend in the laboratory will undoubtedly be beneficial in my future scientific endeavors, and will also foster my dream to continue learning, discovering and creating new ideas which will contribute to scientific academia as well as benefit my community.

## Application for 2013 Undergraduate Research and Creative Activity Award

### 1. Project Proposal (800 word limit)

Bose-Einstein condensation (BEC) is a new state of matter for which all the atoms in a trapped ultra cold gas (close to absolute zero) fall into the lowest energy state possible, condensing into a “super atom” that behaves like a single wave instead of an assembly of particles. Its experimental observation in 1995 has stimulated an intense research activities ranging from basic science such as slowing down a beam of light to a mere 38 mph as was first experimentally demonstrated by Prof. L. V Hau of Harvard University to technological applications such as pulsed atom lasers as was first experimentally demonstrated by Prof. Wolfgang Ketterle’s group at MIT to mention a few.

The dynamics of BEC is mathematically modeled by the so-called Gross-Pitaevskii equation (GPE) which is a partial differential equation governing the time evolution of the condensate wave function in the presence of trapping potential (that keeps the atoms together and prevents them from escaping).

I plan to work closely under my supervising professor, Dr. Muslimani from the Mathematics Department at FSU, to investigate a model he has recently formulated. The model exploits certain symmetries under the well-known Fourier transform, a mathematical tool used to display information about a system in terms of both position and momentum. My goals are to completely characterize the solution set and explore interesting features that pertain to physical phenomena.

The strategy I plan to implement in this research is to use a combination of methodologies based on numerical and analytical techniques. At the computational level, I plan to use a symbolic programming language such as Mathematica and the computational language Matlab to find an approximate and analytic solutions to the GPE in question. These closed form solutions will be tested numerically to achieve a full parameter control as well as a comprehensive picture of the novel physics. At the mathematical level, I will use methods of Fourier analysis applied to partial differential equations.

The timeline of the research I plan to peruse is as follows:

1. In May, I will do a comprehensive literature search to attain a solid understanding of the physical and mathematical issues involved and be well informed on the progress made in the field of BEC.
2. By June, I expect to have at least one closed form solution to the GPE.
3. In July, I plan to implement the well-known methods of linear stability analysis to investigate the nonlinear dynamics of self-trapped atomic modes subject to various types of perturbations.
4. Through August I will compile all of my results into a coherent document. I will begin working on some a presentation for the Fall

## Application for 2013 Undergraduate Research and Creative Activity Award

### 2. PERSONAL STATEMENT (500 word limit)

My history with physics is a long and developed one. I have wanted to be a scientist since the age of three, which is attributable to many weekends my father would spend teaching me about math & science- stars, machines, anatomy, evolution, geometry, and chemistry. While this instilled curiosity served me well over the years, I didn't decide to become a physicist until 7th grade when my math teacher brought in a PBS special on string theory for the class. It was a powerful experience for me, as a child, to learn about how my own reality was seemingly held together by some little-known magic; however, the magic was real and I could devote my life to studying it. Following this experience I began dedicating my time to reading more about math and physics, sometimes letting it trump over other areas of my life. I eventually graduated high school at the age of 16.

Under some poor advice I believed that a degree in physics was a foolish endeavor, and spent my first few years at university soul searching in the sciences. I learned a lot about what I liked, and my tastes matured into contemporary topics. I eventually joined the ranks of the physics and applied math departments and found that I excelled in these classes; even more importantly, I enjoyed them.

I took my first class in Partial Differential Equations (PDEs) with Dr. Muslimani last spring. It was an exciting and eye-opening experience. I recognized the importance of PDEs in my future career – they turn out to be one of the most widespread and useful tools in physics. Noting my enthusiasm, he asked me to join his research group and introduced me Bose-Einstein Condensates in Condensed Matter physics. It was the end-all for every topic I've had interest in since coming to university: many-body systems, nonlinearity and chaos, quantum mechanics, computational work and PDEs. With the quirkiness of the subject, I feel like a 7th grader again!

I was advised to take some very informative classes such as Numerical Analysis, Linear Algebra, Quantum Mechanics and Complex Analysis, all of which I've completed with A's. To my benefit I also have past research experience in a lab where I used MATLAB to run & write programs. I spend most of my free time reading physics book and articles on my own, which I believe, has increased my scientific literacy.

The experience I gain working on this project will help prepare me for graduate studies and beyond. Research experience is at a premium in physics, especially in the domain of theoretical work. My hope is that when I go to graduate school my current work will speak for my capabilities as a researcher and help me join a theory group, which is highly competitive at most universities. It is likely that I will continue studying condensed matter physics and that the experience I gain this summer will stay with me in professional career.

## 1. PROJECT PROPOSAL (800 word limit)

The project that I am proposing is going to revolve around psychologist Dr. Mark J. Blechner's term, the "closeting of history", which he coined in his novel, *Sex Changes: Transformations in Society and Psychoanalysis*. The "closeting of history" is the phenomenon in which evidence that suggests gay or bisexual behavior is omitted from the narratives of important historical figures, thus allowing them to be imagined as heterosexual by future generations. One example of this occurrence was the deletion of a poem that Abraham Lincoln had written from the biography, *Herndon's Life of Lincoln*, because the subject of the poem was a relationship between two men, and would have raised questions about Lincoln's sexuality. I would like the artwork for this creative project to counter this phenomenon, placing historical figures and popular characters in situations that complicate their sexuality, and removing them from the heterosexual narrative to which they have been confined. I want this project to challenge the idea of "normativity" as applied to sexuality by re-appropriating iconic figures, those which have been symbols of heterosexual masculinity and success, as tools for showing sexuality as a performance—something that is fluid rather than compartmentalized. I want key pieces to simultaneously tackle the discomfort associated with excessive femininity, particularly when that femininity is applied to powerful individuals, and to negate the idea of the effeminate as weak.

I have chosen Paul Rutkovsky to supervise this project—he has been my drawing instructor for two years, as well as a great motivator and supporter of my creative endeavors. He has allowed me to explore different drawing media through the effective use of classroom resources, and has given me tips on how to best use supplies I was unfamiliar with. He has taught me methods of rendering figures, and has witnessed my improvement firsthand; therefore he knows my capabilities. It was in his class that I began to artistically explore the themes and styles that have led me to this project. I plan on working closely with Paul, checking in with him at least once a week for both conceptual and technical feedback.

My passion for this theme isn't confined to my artistic pursuits—I continued to explore this concept, as well as the rejection of the effeminate as powerful, in a research paper I wrote in Professor David Ikard's Multi-Ethnic Literature class, which I believe has also prepared me to undertake this summer project.

Should I receive the URCAA fellowship, I will start my art in the early summer, and divide my funds and time-frame as follows:

### **Travel**

**Where:** New York City

**When:** Four days; mid-summer, when my art project is halfway completed.

Day 1: Visit The Leslie Lohman Museum of Gay and Lesbian Art.

Day 2: Take the LGBT gallery tour in Chelsea.

Day 3: Share my art with an artist career consultant.

Day 4: Network with gallery owners

**Why travel:** Throughout my art education, I have never been introduced to LGBT artists, save for the few I have found while doing my own research. Although Andy Warhol is covered as a Pop Artist, his sexual identity is never explored, and he is never addressed as a gay artist. The Lohman Museum covers a wide range of LGBT artists from angles that are not covered in art history textbooks. A trip to this museum, plus the gallery in Chelsea, will help me discover how other artists cover issues of gender, sexuality, and femininity, and will help me realize additional creative ways of addressing my topic. The museum encourages emerging artists to submit their work for review, which, combined with an artist consultation, will help me strategize my entry into the New York art scene. Prior to my arrival, I will email Dr. Blechner, who lives in the city, to see if he might discuss queer theory with me during

my stay.

**Cost:** \$1500. Includes:

- Airfare (\$480).
- Gallery tour/ artist consultation (\$320)
- Hotel expenses, commute, meals, etc (\$700).

### **Art Supplies**

**Cost:** \$1100. Includes:

- Canvases (\$350 from Utrecht)
- Oil paints (\$300 total; at \$16.99 per 180 ml tube)
- Chalk/ oil pastels (\$186.99 for “Van Gogh” and “Prismacolor” sets)
- Acrylic paints (\$70.00 from Utrecht)
- Graphite, brushes, charcoal, turpentine, etc.

### **Art Show**

**Where:** Tallahassee

**When:** End of summer, after my art is completed.

**Why a show:** I will conclude with my own art show in order to gain exposure as an artist and to share my vision and discoveries on sexuality, history, and femininity, with the Tallahassee public before I graduate.

**Cost:** \$400. Includes:

- Advertising (\$100)
- Mounting art, cleaning/preparing a venue (my faculty supervisor, Paul Rutkovsky, has offered to let me use his space on Gaines Street as a resource), providing light refreshments, etc (\$300).

I will use the remaining money to cover overhead expenses, so that this project can be my full-time occupation.

## 2. PERSONAL STATEMENT (500 word limit)

I first took an interest in sexuality during my junior year of high school—an interest that soon evolved into a passion. The gay rights movement became the first cause that I had ever immersed myself in, and it was the spark that fueled my exploration into the perspectives of sexual normalcy, fluidity, and performativity.

I encountered the term “closeting of history” for the first time last semester, while independently researching Abraham Lincoln's sexuality. Up until that point, I hadn't realized that general historical conversations were contrived so that the sexualities of major figures are actively buried when they deviate from the “norm”, depriving many young people of gay role models. I began to research the topic, scouring databases for any sign of a “historical closet” and its occupants. Eventually I discovered several figures, including President James Buchanan and Bram Stoker (the author of *Dracula*), both of whom I had previously assumed were heterosexual based on their depictions. This research has prepared me by familiarizing me with the subject matter that I wish to focus on for my creative project, and is the driving force behind my artistic vision and expression.

The first time I visually challenged the “closeting of history” was for my Drawing II final, where I drew six American presidents in drag, complete with drag names and their own catch phrases. This is one series I wish to expand on; it has helped me develop the playful, colorful style with which I intend to create the artwork for this project.

As a student with two majors, I regret not having the schedule availability to apply for Florida State's BFA program, which would have given me the opportunity to enroll in more art classes and to create more artwork. In granting me the time and resources to complete my project, this fellowship is an invaluable opportunity that will help solidify my portfolio, thus making me a more competitive applicant for graduate schools and employers. I will use the funds to make my artwork my full time occupation; this will give me a chance to practice the discipline required to become a career artist, and to spend a summer honing my skills—something that becomes increasingly valuable as my graduation date draws nearer.

The trip to New York City will give me the chance to consider and prepare for my career beyond Florida. An artist career consultation will identify how my artwork fits into the New York art scene, and provide me with a custom-made list of galleries where I will have the greatest chance of displaying my art. It will also present me with a specific, step-by-step plan on how to best develop relationships with each individual gallery owner, which I will begin to pursue before leaving the city. At the end of the summer, I will put the work from my creative project on display at my own art show in Tallahassee, which will provide me with the experience of organizing a gallery and help me network with local individuals who are interested in my art.



## **Project Plan (800 Words)**

Present a plan for a project that you will pursue over the summer. Your proposal should describe the problem to be investigated and include a timeline. Describe how you chose your supervising professor and community-based organization, and how you expect to work with both parties to execute the research. The proposal should also outline the community organization's research need, how your project will address this need, as well as the organization's willingness to have you execute the research.

The WHO reports 1.8 million people die every year from diarrheal diseases; 90% are children under 5, mostly in developing countries. 88% of diarrheal disease is attributed to unsafe water supply. (1) Many community schools in the Volta Region of Ghana depend on drinking water from unhygienic sources. Students and teachers not only use this unsafe water for drinking but to wash and cook as well. The lack of clean drinking water and sanitation systems is a severe public health concern in Ghana, contributing to 70% of diseases in the country (2). There are also many microbes and dirt particles in the water that can contribute to these illnesses. Exposure to microbes in water can lead to nausea, fevers, diarrhea and dehydration. Long-term exposure can cause rashes, heart disease, diabetes, cancer, and a number of immune, neurological, developmental, and reproductive problems (3). If these schools are not given access to potable water, then there is an extreme concern for the public health at hand in each one of these communities.

This summer, I will intern with Humanity and Community Development Projects (HCDP), located in Ho, Ghana. HCDP is a non-profit organization that strives to integrate the most progressive technology with underserved communities in order to improve the quality of life within these communities in terms of education, technology, and health. HCDP also focuses on improving the human capital of local Ghanaian municipalities through volunteer-based medical, curative, and public health-related developmental-projects that strive to dynamically change and refine health issues in order to create a sustainable and thriving community. These community and volunteer-driven projects will allow for the municipalities to

improve their economic standing, while also improving quality of life for their residents by developing healthier and more progressive lifestyles.

Through close contact with HCDP, I will research, design, and launch a public health project this summer entitled Water for Students by Students (WSS). The project will be based in Ho, Ghana, and five surrounding municipalities. This program is a long-term engagement enacted in order to construct and maintain water storage systems in five local Ghanaian primary schools.

The first step in this project is an in-depth assessment process. I will conduct an extensive series of data collection interviews and surveys among the students and teachers of the school in order to determine the current state and situation of water purification and collection within the school. School-wide meetings and gatherings will also be held, and a filtration and purification process will be finalized and agreed upon by the entire community at hand. Implementation, the next step of the process, will be carried out with the participation of the school and community members.

In coordination with HCDP, I will research, design and help implement establishing water storage and filtration systems that will provide each school with safe, potable drinking water. These systems will set the foundation as the schools' main source of clean water during the rainy season. The process involves fixing rain gutters to the edges of school roofs, which captures water traveling in the gutters to a filter fixed to the end. The water will then eventually transfer into a storage tank with a spigot.

In conjunction with the WSS project, I will also design and coordinate an educational program for the students at the primary schools. We will teach the students the importance of a clean water supply, and the dangers of drinking, cooking, and using non-potable water. This element of the project will help increase the sustainability of the WSS program by educating the youth so that they can continue the project in the future.

The project can be expected to take approximately 2 weeks to complete per school, for a total project length of 10 weeks. Roughly 1-week will be spent interviewing, and 1 week will be spent building and constructing the filtration system.

The supervising professor I have chosen for this project is Dr. Stephanie Simmons Zuilkowski. Her research specializes in education in Sub-Saharan Africa--particularly rural Kenya--and has assessed the public health situation in African cultures before. She has numerous articles published in research journals such as *Journal of HIV/AIDS and Social Services*, *South African Journal of Childhood Education*, and many more. She is an overall expert on the field of education and health in Africa, a perfect overseer for my project.

I plan on publishing my work in undergraduate research journals, and also pursuing other options for presenting and sharing my research with the FSU community. This research will not only benefit the Ghanaian community at large by improving the general health of the society, but also FSU by helping increase FSU's students' awareness of the crucial global health issues throughout the world.

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2. Organization for Economic Co-operation and Development (OECD). African Economic Outlook 2007 - Ghana Country Note (PDF). Retrieved 2008-03-25., p. 294
3. "Safe Drinking Water." Safe Drinking Water. Physicians for Social Responsibility, 2009. Web. 10 Jan. 2014.

## **PERSONAL STATEMENT (500 word limit)**

Please describe how you became interested in this topic and any activities that you believe have prepared you to undertake this project. You should also discuss how your research project relates to your graduate school, professional school, or career goals.

I have always believed that an individual's health is an inherent human right. Access to healthcare should not be an issue of money, geographic location, race, ethnicity, or socioeconomic standing. A community or individual should not be left to suffer the slings of medical agony simply because of their lack of access to modern and affordable medicine. Every human on this planet is a someone with needs and rights, whose life is precious, intimate, and fragile. I find it instinctual—a passion rooted deeply into my individuality—to forge a system in which access to medical care is given to those who need, not to just those who can afford it.

I have dreamt of creating a non-profit organization that represents a cultural mosaic: advocating health and well being, while integrating the wonders of modern medicine and research. In order to achieve this lifetime goal I plan on applying to M.D./MPH or M.D./Ph.D. programs, and focusing my interest on global health. I hope that this career choice will allow me to create an NGO that can help improve and enhance the healthcare situation across the globe. The organization would focus on performing the latest medical research, and then implementing that research within disadvantaged communities. I want to create an organization where everyone works together—scholars, researchers, doctors, workers, and professionals—who strive to do whatever it takes to make those who are ill, well. I want to create an organization where the employees and volunteers treat patients like they are their own family. I want to change the world.

Currently at Florida State University I have helped bring a new RSO to campus of which I am currently the Marketing Director: Advocates for World Health. We are one of many chapters of the parent organization, but the overall goal is the same. Our strategy is to collect excess medical supplies from local hospitals and clinics, repackage those supplies, and send them abroad to countries and communities in need. This presents not only the local community with a cost effective way to discard their excess supplies, but also benefits global inhabitants that lack the basic healthcare needs.

Also, I have worked hand in hand with volunteer organizations such as the American Red Cross Volunteer Lifesaving Corps and the International Surf Lifesaving Association. In both organizations I cared for, and assessed the general health status of any patrons needing medical assistance, and taught classes on water skills, lifesaving techniques, and how to build a long-term dynamic lifeguarding program.

I know that the skills I have acquired from these previous experiences accompanied with my desire to create a better global healthcare system will qualify me to succeed in this project. This project is just the first stepping-stone unto many more great projects that will collectively build into a myriad of dynamic and zestful passions that will one day, lead me to my dream.

### **3. BUDGET JUSTIFICATION**

Please prepare a budget for your research project (e.g., airfare, food and lodging, supplies, visas, travel insurance, pre-trip vaccinations).

Below is a proposed budget for the trip:

Flight: \$1700 Dollars

Omprakash Global Scholars Fee: \$850

Visa: \$100

Vaccines: \$100

Fees for actual filtration system

Big Poly Tank: \$1300

Platform Drainage System: \$900

Iron rod for Security: \$500

Project overseer: \$300

HCDP project overview: 12%

Total cost of a project (per school): \$3700

**TOTAL COST OF PROJECT: \$10,584**



# HUMANITY AND COMMUNITY DEVELOPMENT PROJECTS

Ho - Fiave Down  
Volta Region  
Ghana /West Africa  
Tel: +233 (0)248654664

Bankers: Zenith Bank Ghana Ltd.  
Ho

E-mail: [info@hcdprojects.org](mailto:info@hcdprojects.org) / [richardanku62@yahoo.com](mailto:richardanku62@yahoo.com)  
Website: [www.hcdprojects.org](http://www.hcdprojects.org)  
Date: 27 /01 / 2014

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Our Reference: HCD/37VP/02/14

Your Reference: .....

Dear Sir/Madam,

## **APPLICATION FOR PARTNERSHIP WITH COLE FRIEDES FOR PLACEMENT AND SUSTAINABLE COMMUNITY DEVELOPMENT PROJECTS IN GHANA**

Humanity and Community Development Projects (HCDP) is a registered and recognized non-governmental project and volunteer organization incorporated under Act 179 at the Registrar General's Department in Accra, Ghana and has a unique role to play in the lives of the deprived living in the rural communities of Ghana.

HCDP is an organization involved in different kinds of volunteers' placement/projects; such as assisting in computer literacy, healthcare, community development, and ethnographic research for data collection.

As part of our newly designed projects such as the Water for Students by Students project, which seeks to provide portable drinking water for community students, we would like to work with **XXXXXXXX** to research and possibly course a change within the Adaklu Anyigbe District for a duration of about two and half months.

Thank you.  
Yours Faithfully,

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EXECUTIVE DIRECTOR  
HUMANITY AND COMM.DEV. PROJECTS  
HO. V/R

.....  
Anku Richard Effe  
(Executive Director)

