SURP

SUMMER UNDERGRADUATE RESEARCH PROGRAM

2018

VANGUARD UNIVERSITY

The Summer Undergraduate Research Program (SURP) at Vanguard University is a dynamic collaboration between students and faculty which facilitate the mastery of research methodologies through imitation and practice.

The benefits of engaging students in undergraduate research (UGR) include: increased student participation, increased retention, enhanced learning experiences, and a practical example of the integration of faith and learning.

SURP is the embodiment of UGR which employs an intensive research immersion experience for students in the summer.

Initially started in 2007 for students of Biology and Chemistry, SURP expanded to include students from Sociology and Psychology in 2012 and 2016. In addition, this year, SURP will be including History to its list of research areas. Now as SURP celebrates its 11th anniversary in 2018, students from the Department of Liberal Studies have joined the UGR endeavor and effectively expanded the potential for interdisciplinary projects.

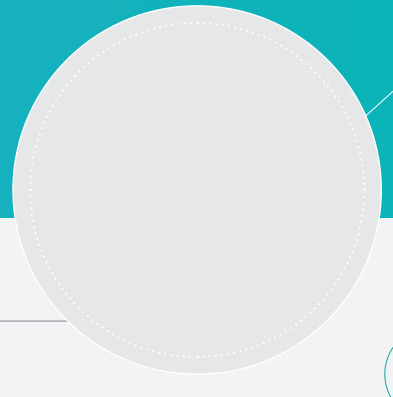
SCHEDULE

1:00pm | Keynote Speaker: TBD

2:00pm | Poster Session: SURP Fellows and Participants

3:30pm | Awards Presentation: Dr. Michael Hanna

KEY NOTE **SPEAKER**



NAME NAME

History and Political Science Major | Class of 2019

This research project seeks to study the way pirates in the 16th and 17th centuries influenced the British Empire. In the late 1500s, European powers such as Spain and Portugal were the largest colonizers of the New World. In order to build up her own colonies and naval prowess, England relied on piracy. Not only did piracy help found the British Empire, but it also helped Britain expand into a world power through the use of privateering, or the hiring of pirates by the government. Research commenced at UCI with the British Naval History special collection. Analyzing various manuscripts and letters from the 18th and 19th centuries, as well as documents from databases such as Early English Books Online and Empire Online, found that piracy played a larger role in British history than many scholars realize. These sea robbers, the hostis humani generis, influenced trade in the Caribbean and the increase of capitalism and democracy in the Western world.

“QUote quote”

DEPARTMENT OF **BIOLOGY**

FACULTY ADVISOR | ***DR. ITZEL CALLEJA-MACIAS***

Genetic Variation of Type 2 Diabetes in Hispanic populations

GENESIS DE LA ROSA
Biology Major | Class of 2020

This summer, SURP has allowed me to apply my classroom knowledge to the real world.

Diabetes among Hispanic Americans is one of the most important health problems in the United States, showing a rate nearly twice as that of non-Hispanic adults. Early diagnose is needed to improve the control of the disease. Recent studies have identified associations between single nucleotide polymorphisms (SNPs) and type 2 Diabetes. Unfortunately, few studies focus on the Hispanic population. The data in this research consist of samples of buccal swaps from Hispanics with and without Type 2 Diabetes. DNA was extracted from the cheek cells, and specific primers amplified the SNP by PCR that were confirmed by gel electrophoresis. The SNP was differentiated by enzymatic restriction assay. Data generated from this study will shed light on the prevalence of SNPs associated with Type 2 diabetes in the Hispanic population of Southern California.

DEPARTMENT OF **BIOLOGY**

FACULTY ADVISOR | ***DR. ITZEL CALLEJA-MACIAS***

Genetic Variation of Type 2 Diabetes in Hispanic populations

MELINDA TALAVERA
Biology Major | Class of 2018

In the United States alone, 30.3 million people have diabetes. Another 84.1 million Americans are living with prediabetes, a disorder that eventually turns into type II diabetes if left untreated. In 2017, the American Diabetes Association released a report that estimated the total economic cost of diagnosed diabetes in the U.S. to be $327 billion. Single nucleotide polymorphisms, also known as SNPs, make up the most common genetic variations amongst people. Our goal is to find the prevalence or lack thereof of a previously studied SNP within the DNA of Hispanic/Latino subjects that will predict the predisposition of type II diabetes. After DNA extraction of collected buccal samples, the samples will be run through a polymerase chain reaction (PCR) and confirmed by gel electrophoresis. A restriction enzyme reaction will discriminate the SNP.

SURP has been the culmination of four years of hard work, blood, sweat, and tears as a Biology major. It has reinforced my calling and my love of science. I will always be grateful for this opportunity.

Determining the Interaction Between AJUBA Protein and E-cadherin During the Brain Development of *Drosophila*

KAROL CANALES
Biology Major | Class of 2019

"SURP has giving me the opportunity to obtain essential laboratory techniques that I could use for my future carrier goals. It has made me more passionate about research since I know there's still so much more to discover."

The cadherin family is one of the most important molecules involved in cell adhesion. E-cadherin is a calcium-dependent protein that is needed for the formation and maintenance of epithelial cell-cell contact. If E-cadherin function is lost, it can lead to the formation of benign or metastatic cancer cells. A common organism that is used to study E-cadherin is *Drosophila melanogaster*. Although this model organism has help to confirm that E-cadherin interacts with other proteins that are needed for cell-cell interactions such as a-Catenin, the mechanism of E-cadherin is still not understood. The purpose of this study is to test for the possible interaction between AJUBA protein and E-cadherin using Immunoprecipitation and Western blot. Determining the types of proteins E-cadherin interacts could help discover the mechanism that renders E-cadherin.

DEPARTMENT OF **BIOLOGY**

FACULTY ADVISOR | ***DR. SIAUMIN FUNG***

Schizophrenic Behavioral Study in Mutated E-cadherin *Drosophila*

CAMERON MISSAKIAN
Biology Major | Class of 2019

Schizophrenia is a genetic disorder of hallucinations, disorganized speech, and interrupted sleep, afflicts roughly 1% of the world's population, and has no cure. Although *Drosophila* have been a reliable model for other genetic experiments and research; there are not that many genes homologous to humans and fruit flies for a schizophrenic model. This research hopes to discover if the E-cadherin gene could be a gene involved in schizophrenic behavior in *Drosophila*. Mutant E-cadherin flies were created by expressing RNAi of E-cadherin in the adult brain and a tissue specific promoter, Elav, was used to drive Swith-*Gal4*. Flies were fed RU486 to activate *Gal4* to turn on the transcription of RNAi E-cadherin. Flies would be monitored and given quantitative assays and sleep assays. If schizophrenic behavior is observed then the E-cadherin gene could be a possible candidate for schizophrenia in fruit flies, making *Drosophila* a more reliable model for schizophrenia.

"SURP has given me the opportunity to use the techniques I learned in my classes and apply them to official research. It's an amazing experience!"

Acyl-homoserine Lactone Synthesis in *Arthrobotrys oligospora* as a Biological Control Agent for Parasitic Nematodes

BRIANNA FRAWELY

Biology Major | Class of 2019

SURP gave me the opportunity to experience research and apply the information I have learned in a practical lab setting.

Every year, over a billion pounds of pesticides are used in the U.S., and nearly 5.6 billion pounds worldwide (Alavanja, 2009). There is a need to investigate alternative methods to combat crop-damaging pests, such as the nematode. The nematophagous fungus, *Arthrobotrys oligospora*, has been studied for its potential for nematode control. However, the mechanism of interaction between carnivorous fungus and parasitic nematodes remains unknown. We hypothesize that quorum sensing is the key to understanding how *A. oligospora* tracks and lures its prey. Quorum sensing is the process used by certain species of prokaryotes to communicate with one another. Acyl-homoserine lactone (AHL) is a molecule commonly used by bacterial species for this mechanism (Werner et al., 2014). Preliminary data demonstrates the presence of AHL in the supernatant of *A. oligospora* exposed to nematodes, suggesting that AHL plays a role in microbial predator-prey interaction. Our studies suggest that worms prefer *A. oligospora* over a neutral attractant. This information may contribute to a safer alternative to pesticides.

DEPARTMENT OF **BIOLOGY**

FACULTY ADVISOR | ***DR. ROXANNA OCHOA***

Arthrobotrys oligospora as a Biological Control for the Growth of Parasitic Nematodes by Means of Communication through Acylated-Homoserine Lactone

ALEXA RAMIREZ

Biology Major | Class of 2020

The United States spends 8 billion dollars on 80 percent of pesticides that are produced worldwide on an annual basis, leading to over 1 million human pesticide poisoning occurrences (Pimentel, et al). Nematodes are microscopic parasites which attack plants via the root system, leaving plants susceptible to disease (Williams, et al). *Arthrobotrys oligospora* is a nematophagous fungi that is capable of forming elaborate trapping structures only in the presence of nematodes, indicating the use of a quorum sensing sensory signal (Hsueh, et al). Quorum sensing is typically used by bacteria to communicate with other bacteria (Miller, et al). Acylated-homoserine lactone (AHL) is a molecule used for quorum sensing in bacteria and is a known chemoattractant model for the nematode, *Caenorhabditis elegans* (Bracho, et al). The mechanism of communication and trap formation between *C. elegans* and *A. oligospora* remains unknown. Recent data revealed that *A. oligospora* has a homologous AHL gene (Yang, et al). The primary focus of this study is to investigate the means of communication between *A. oligospora* and *C. elegans* through AHL. Our data suggests *A. oligospora* produces AHL.

Being a part of SURP has allowed me to apply my textbook knowledge in real research situations, teaching me how to be flexible in the lab and adapt to any troubleshooting that came my way.

Immunization against Aß plaques in an Animal Model of Alzheimer Disease

DANIEL POUNDS

Biology Major | Class of 2020

Before SURP, I believed that all the adventure in the world was gone, that there was no uncharted territory left to discover, now I know better.

Alzheimer's Disease is a neurodegenerative disease which is classically characterized by the accumulation of Amyloid ß (Aß) deposits and Tau, neurofibrillary tangles, (outside and inside the neuron, respectively) in the brain that ultimately lead to loss of neurons and impaired cognitive function. The goal of this research is to prove the efficacy of an active immunization against the accumulation of Aß plaques in the 5XFAD and 3XFAD mouse brain. After selective immunization with a novel vaccine, mice go through behavioral tests to grade cognitive function and are subsequently sacrificed to isolate their brain and other organs. After fixation in paraformaldehyde, the brain is sliced into 50µm sections, stained and scanned with a confocal microscope. The tissue scans are then further analyzed to determine the effects of the vaccination in terms of Aß accumulation compared to various controls. This method will continue until enough data is collected and analyzed to draw necessary conclusions.

DEPARTMENT OF **BIOLOGY**

FACULTY ADVISOR | ***DR. MAURICIO REYES***

Immunization against Aß plaques in an Animal Model of Alzheimer Disease

MONICA AWAD

Kinesiology Major | Class of 2018

Alzheimer's Diseases (AD) is defined as a progressive neurodegenerative disease. Classically AD is characterized by the accumulation of extracellular amyloid plaques and intracellular neurofibrillary tangles (NFTs). Consequently, the Amyloid ß (Aß) proteins aggregate near synapses, blocking communication between neurons; interneuronal Tau proteins bind together inside the cell leading to the collapse of microtubules. It is hypothesized that the immunization of an AD mouse model with a peptide derived from Aß will reduce the pathology in the brain. The methods used in this research included: immunizing, sacrificing and tissue harvesting, brain slicing, immunofluorescence staining, and brain analysis. There were three different groups of mice: active vaccine, placebo, and non-injected. The active vaccine and placebo groups were injected at one, two, and three months of age. This process will continue until enough data has been collected; following this, the data will be quantified and statistical analysis carried out.

SURP afforded me the opportunity to work alongside and receive mentorship from scientists at one of the nation's leading research universities, allowing me to practice and further hone my knowledge and skills while conducting Alzheimer's Disease research.

A Qualitative and Quantitative Analysis of Serotonin in *Brassica rapa oleifera*

COLETTE BEARD

Biochemistry Major | Class of 2019

"Being a part of SURP has taught me the day-to-day of intensive research, both the normalcy of trial and error and how to be constantly envisioning and interacting with one's research in order to achieve working results."

It has been found in recent years that in 42 plant species there is significant production of serotonin. Discovering how to manipulate the production of serotonin in plants will have impactful agricultural and clinical applications. Plants which produce more serotonin will develop better and be more resilient, leading to larger yield in crops. Reducing the production of serotonin in plants would be to interrupt the metabolic process, allowing plants to collect the precursors of serotonin and store them without continuing on to produce serotonin. This would be beneficial for human consumption because these building blocks can be turned into serotonin in the digestive process, thus increasing levels of serotonin in the brain, which is an important component in many neurological functions. The objectives of this research are to initially perform a qualitative and quantitative analysis of serotonin levels found in *Brassica rapa oleifera*, and then test varying conditions of the plant's life cycle to increase or decrease the amount of serotonin produced. The method will consist of seed sterilization and germination, transference to NLN basal medium, lyophilization, extraction, and quantitative instrumental analysis via High Performance Liquid Chromatography (HPLC).

DEPARTMENT OF **BIOLOGY**

FACULTY ADVISOR | ***PROF. JOSHUA THOMPSON***

Analysis of Phytoserotonin Levels in *Brassica rapa subsp. oleifera*

BRITTNEY STEVENS

Biology Major | Class of 2020

Serotonin, also known as 5-hydroxytryptamine (5-HT), is an important neurotransmitter in the human body. Serotonin helps regulate sleep cycles, plays a key role in balancing mood, and generally contributes to feelings of happiness and overall wellbeing (McIntosh, 2018). Although serotonin was first discovered in mammals, it recently has been found to be present in plants, where it is termed phytoserotonin (Mandal, 2014). Serotonin has several important roles in plant growth and development, such as functions in regulation of reproductive development, control of root and shoot growth, maintenance of plant tissues, delay of cell deterioration, and responses to a variety of environmental stresses. (Erland et al. 2015). The primary objective of this research project is to determine the amount of serotonin present in *Brassica rapa subsp. oleifera*, determine where the highest levels of serotonin are located, and to induce serotonin production in the plant. Through analysis via High Performance Liquid Chromatography (HPLC), serotonin levels will be discovered quantitatively. Recent discoveries enlighten the world about the various important roles of phytoserotonin, for example; physiological roles as a neurotransmitter, antioxidant, signaling molecule, plant hormone, ion permeability, regulation of organogenesis, induce seed germination, and adaption to environment changes (Ramakrishna et al. 2011). Therefore, new discoveries of how to induce serotonin production in plants may lead to advancements in agriculture leading to higher adaptability of plants to environmental stresses and longer lifespans of plants due to serotonin's role in delaying senescence. This study will examine the varying levels of this newly found secondary metabolite further and identify where the serotonin is primarily located to pave the way for more mechanistic observations leading to future discovery.

"Biochemistry was one of my favorite classes to take as a student. I loved learning how chemistry contributes to the understanding of biological system mechanisms and all of the chemical reactions that are important to biology. As a SURP fellow, I am able to expand my scope of knowledge from previous courses as well as discover new and important applications of research that will be accomplished over this program and will have a lasting impact in the future."

DEPARTMENT OF **CHEMISTRY**

FACULTY ADVISOR | ***DR. JOHN TERHORST***

Creating and Expanding a Fragments Library for Drug Synthesis

KACIE QUINONES
Biochemistry Major | Class of 2019

SURP has taught me that research, specifically chemistry research, can be done in places other than the lab, like a computer. This has allowed me to learn new knowledge on how chemistry can be done and on ways that computers work.

Human Immunodeficiency virus (HIV) is a virus that is spread through bodily fluids that causes damage to the body's immune system. HIV uses reverse transcriptase to convert RNA into DNA. Because reverse transcriptase is bad at converting RNA into DNA perfectly, it creates a significant amount of errors when base matching. This research aims to create a molecule with drug related properties that will dock into the allosteric site of HIV, even with possible mutations. For a molecule to be processed by the human body, it must have 95% of all drug related properties. This objective will be achieved through the creation of a fragment library and database of each fragment's properties. Each molecule will be parametrized by an optimized potential liquid simulation (OPLS) force field to determine if it can be processed by the human body. The best molecules that have 95% of all drug related properties will then be put through a docking simulation. The docking simulation will determine how well a molecule binds into the allosteric site of HIV and inhibits reverse transcriptase.

DEPARTMENT OF **HISTORY**

FACULTY ADVISOR | ***DR. KRISTEN LASHUA***

Piracy and the Creation of the Early British Empire

SUMMER CONNER
History and Political Science Major | Class of 2019

This research project seeks to study the way pirates in the 16th and 17th centuries influenced the British Empire. In the late 1500s, European powers such as Spain and Portugal were the largest colonizers of the New World. In order to build up her own colonies and naval prowess, England relied on piracy. Not only did piracy help found the British Empire, but it also helped Britain expand into a world power through the use of privateering, or the hiring of pirates by the government. Research commenced at UCI with the British Naval History special collection. Analyzing various manuscripts and letters from the 18th and 19th centuries, as well as documents from databases such as Early English Books Online and Empire Online, found that piracy played a larger role in British history than many scholars realize. These sea robbers, the hostis humani generis, influenced trade in the Caribbean and the increase of capitalism and democracy in the Western world.

Thanks to SURP, I now have the confidence to complete a large research project and get my hands dirty in some old manuscripts! The research, mentoring, and writing was much more challenging than the average semester.

Latino Youth Participation in Afterschool Activities

ASHLEY REYES
English Major | Class of 2020

"SURP allowed me to discover that research is not just for the sciences but also the social sciences. Though the research methods differ, the experience and the results we get from the research is rewarding."

This research is focused on organized after-school activities, specifically looking at the participation of Mexican origin adolescents. The term "organized after-activities" refers to activities that are adult supervised and take place outside school curriculum. Studies show that participating in these activities helps youth develop interpersonal skills and gain basic skills related to academic. Many adolescents participate in these activities, however, Latino students participate in much lower rates versus non-minority youth. In this research, we were able to use and analyze qualitative data to see what motivates Latino adolescents to participate in these activities. The data was collected from thirty-four families residing in Arizona and was based on interview questions that were asked to each family. Cultural values were one of the reasons why Latino youth participated in organized activities because of the knowledge and awareness they were able to receive from these activities. I wanted to research more on how the views of cultural values vary between the adolescent and the parent based on their cultural orientation, immigration status, and language preference. Using the coding method, some of the results indicated that the less acculturated and more enculturated adolescents have low extracurricular activities and the foreign-born and non-native English speaking adolescents had lower participation in these activities.

DEPARTMENT OF **LIBERAL STUDIES**

FACULTY ADVISOR | ***DR. ALEX LIN***

Latino Youth Participation in Afterschool Activities

MARIA ROA
Sociology Major | Class of 2019

Youth participation in after-school activities provide opportunities for growth and development. However, research has shown that ethnic minority youth partake in these activities at much lower rates compared to those who are from Caucasian families (Fredricks and Simpkins, 2012). This research looks at Mexican-origin parents' views on the type of activities that boys and girls should partake in. For example, Latino daughters with mothers holding more traditional perceptions about gender roles are less likely to engage in masculine activities, such as sports, and/or attend after-school activities due to having more family duties compared to the males (Simpkins et al., 2013). In turn, this research looks at how the parents' views about gender roles is shaped by a number of factors, including their previous involvement in activities, generation status, and income class. This research will be conducted by analyzing qualitative and quantitative data that has already been collected by Dr. Alex Lin and Dr. Sandra Simpkins at Arizona State University. Results thus far have shown that previous activity involvement, neighborhood residency, income class, generation status, and cultural orientation all have some effect on parents' perceptions of traditional and non-traditional gender roles when it comes to after-school activities.

"The SURP Program has definitely exceeded my expectations and has given me the opportunity to expand my knowledge on how to perform proper and thorough research. I have acquired many new skills ranging from working with new programs to simple time management. Overall, I'm really grateful for the whole opportunity and experience."

A Comparison of Conditioning Timelines on Formation of Methamphetamine Associated Memories Using Conditioned Place Preference

MEGAN JESKE
Psychology Major | Class of 2017

"Working as a research mentor has been beneficial to my academic growth as it has helped expand my understanding of research and allowed me to aid others in the process."

Many labs use the conditioned place preference (CPP) paradigm to associate specific cues with drugs to research memory consolidation and reconsolidation. Our lab has used CPP to study whether drug associated memories go through reconsolidation independently or dependently. In order to do this, two separate compartments are paired with methamphetamine (MeAM). To test the most effective process in establishing a preference for the MeAM paired compartments we used a 15 day conditioning timeline, administering MeAM (1 mg/kg; i.p.) before placing rats in a single compartment for 30 minutes each day, as well as a 12 day conditioning timeline, administering MeAM before placing rats in a compartment for 30 minutes, then immediately switching them to a second MeAM paired compartment for another 30 minutes. Our results show that both conditioning methodologies resulted in rats have a strong preference for both MeAM paired compartments, suggesting that the ideal conditioning methodology is the 12 day process in which a single injection of methamphetamine is given to rats.

DEPARTMENT OF **PSYCHOLOGY**

FACULTY ADVISOR | ***DR. MICHAEL HANNA***

Reactivation of an olfactory cue associated with methamphetamine administration renders drug-associated memories liable to disruption through the NMDA Receptor antagonist memantine

ALEXIS OSBOURNE
Biology Major | Class of 2020

Associations that drug users make to the environmental cues lead many individuals to relapse. Exposure to these drug cues evokes the memory of the effects of the drug and can induce drug-seeking behavior. The NMDA receptor is essential for memory consolidation as well as reconsolidation, which is the process in which a memory is restabilized after being reactivated or trigged. Previous research has shown that when memantine, an NMDA antagonist, is administered to rats after reactivation to a methamphetamine-paired compartment it results in rats no longer preferring the drug-paired compartment. What remains unanswered is if a single modality of a drug-associated memory is sufficient to trigger a memory and make it susceptible to interference of reconsolidation by memantine. To test this, rats were placed in a novel environment with the olfactory component of a drug-paired compartment and then administered either memantine (10mg/kg) or saline. Our data show that rats injected with memantine had no preference for the drug-paired compartment compared to the rats given saline. This suggests that an olfactory cue of a drug-associated memory is sufficient to trigger a memory and make it susceptible to interference of reconsolidation.

"SURP has allowed me to gain first-hand knowledge that many undergraduates never have the opportunity to experience."

Disruption of Methamphetamine Associated Memories Through the use of an NMDA Antagonist

TIFFANY TADROS
Biology Major | Class of 2019

"SURP has given me the opportunity to expand my research skills and has shown me how to take what I have learned in the classroom and apply it to a research setting."

Environmental stimuli previously associated with the rewarding effects of the drugs often contribute to relapse among addicts. Once these associations are triggered, the memory goes through reconsolidation, wherein the stable memory becomes unstable again and is temporarily susceptible to interference until it stabilizes again. Previous research has shown that the NMDA receptors are necessary for the reconsolidation of drug-associated memories because administration of memantine, a NMDA antagonist, disrupted drug seeking behavior of rats. In this study, we aimed to determine the specificity of memantine in interfering with the reconsolidation of multiple methamphetamine-associated cues. To test this, we administered methamphetamine in two separate compartments with similar visual components. We then examined if the administration of memantine after the reactivation of one methamphetamine paired compartment would disrupt the reconsolidation of the second methamphetamine-paired memory. Rats injected with memantine showed no preference for the reactivated compartment but preference for the non-reactivated compartment, whereas the rats injected with saline preferred both drug-paired compartments. This suggests that drug-associated memories go through reconsolidation independently and that the reactivation of a single methamphetamine associated memory does not make similar methamphetamine associated memories liable to disruption.

DEPARTMENT OF **PSYCHOLOGY**

FACULTY ADVISOR | ***DR. MICHAEL HANNA***

A Comparison of Conditioning Timelines on Formation of Methamphetamine Associated Memories Using Conditioned Place Preference

TAYLOR UNDERWOOD
Biology Major | Class of 2018

"SURP has given me the opportunity to experience multiple elements of research, from experimental design to interpretation of complex results, along with connecting me with other like-minded people who are passionate about the research process."

The use of memantine as an NMDA blocker has been shown to disrupt the reconsolidation of drug associated memories. To test if multiple drug associated memories go through reconsolidation independently we developed a conditioned place preference (CPP) procedure in which rats were injected with methamphetamine in two similar compartments of two distinct CPP chambers. Two different methods were examined. In the first method, the rats received one injection of methamphetamine or saline and then place in one of four compartment, with alternating days of methamphetamine and saline injections in the four compartments, resulting in a total of fifteen days of conditioning. For the second method rats were given a single injection of either methamphetamine or saline and then place in the drug-paired or drug-unpaired chamber; after remaining in the chamber for 30 minutes, the rats were then transferred to the other drug-paired or drug-unpaired compartment for another 30 minutes. The second method involved a total of twelve days of conditioning. It was found that the two methods result in a preference for both drug paired compartments. It can be concluded that using the second protocol is a reliable method that can be used to test the formation and stabilization of multiple methamphetamine-associated memories.

College Students Engagement in Social Movements

NATALIA TURNBLAD
Sociology Major | Class of 2018

"SURP has given me an opportunity to deepen my professional and personal relationships with professors and other students from my own discipline, as well as meet amazing students from other disciplines that I would not have had a chance to interact with during the school year."

Social movements have been happening in this country since its very beginning; and often they promote a need for change in our society. In this research I will be looking to see how aware college students are of the "Me Too", and "Times Up" movements. The "Me Too" movement began in 2006 to help victims of sexual violence. The "Times Up" movement promotes equality of genders, more specifically the equality of women in society. My research question is: What makes college students engage in social movements and why? To support the research question, I have three main hypotheses. 1) Those who have personally experienced sexual harassment will be more likely engaged in social and political movements that promote change. 2) Those who know someone who has experienced sexual harassment will be more likely to engage in social and political movements that promote change. 3) Individuals who have traditional gender ideology will be less likely to participate in movements that promote social change. The data will be collected through a non-probability, convenient sample by surveying community college students using a self-reported questionnaire. Results will be examined and analyzed by Statistical Package for Social Science (SPSS) program through Chai-square correlation.

DEPARTMENT OF **SOCIOLOGY**

FACULTY ADVISOR | ***DR. ED CLARKE***

Sexual Harassment and Political Engagement Among College Students

PRISCILLA ZIEGLER
Mathematics and Sociology Major | Class of 2019

This study explores factors that predict political activism among college students. One focus of this study is how students' attitudes, perceptions, knowledge, and experiences of sexual harassment and gender inequality relate to their social and political behavior and actions. In this study, students' beliefs are measured and compared to their actions. Do students act on their beliefs? Or do their actions, knowledge and experience shape their beliefs? The sample of this quantitative, cross-sectional study includes over 200 community college students from a public college in Southern California. The hypotheses are: (1) parental and/or peer activism will increase the likelihood of their children's/peer's activism, (2) students who perceive, have knowledge of, or who have experienced sexual harassment or gender inequality will be more likely to participate in social movements that advocate for change regarding these injustices (such as the women's marches and the #MeToo and #TimesUp movements), (3) those who engage in political conversation online are more likely to engage in political activism offline than those who don't, and (4) individuals who hold traditional gender views will be less likely to participate in social and political movements that advocate for women. After explaining the data analysis process (which includes chi-square hypothesis testing among other tests) and examining results, this paper concludes with a discussion about limitations, implications, and suggestions for further research.

"I am so thankful that SURP has provided me with the opportunity to receive mentorship from and work side by side with experts in my field of study! From analyzing and discussing literature, to collecting and examining data, to presenting our research, this program has given me experience that has lead me to feel both confident in my research skills and prepared for future endeavors in my educational career."

VANGUARD UNIVERSITY

55 FAIR DRIVE
COSTA MESA, CA 92626

vanguard.edu

THANK YOU TO OUR
GENEROUS SPONSORS THAT MADE

SURP 2018

A POSSIBILITY AT VANGUARD.

SOUTHERN CALIFORNIA EDISON | US DEPARTMENT OF EDUCATION | BON APPÉTIT.