

12th Annual Undergraduate Research Conference

University at Albany

State University of New York



April 24, 2015

Lecture Center Concourse

Undergraduate Research Conference Schedule

Friday April 24, 2015

Poster Session	3:00 – 4:00
Welcome and Award Presentations	4:00 – 4:30
Presentation Session	4:45 – 6:15

Conference Schedule

Friday April 24, 2015

Please See Abstract Section for Abstracts of Presentations

Poster Session 3:00 – 4:00

Lecture Center Concourse between LC 30 and LC 31

Nikisha Benjamin - "Working Conditions During the Early Nineteenth Century"

Casey Biederman - "Self-assembling Hydrogels for 3D Monolayer Cell Growth: The 'Bio Roll-Up' Project"

Devin Caravello - "Why So Serious? The Impact of Integrating Humor into Math Instruction"

Cristin Ciaravino - "Invasive Species Invasion- Trail View State Park"

Erin Gardner - "Effect of College Stress and Racial Discrimination on Black Student Well-Being"

Justin George - "Pallet Fabrication Techniques for 2D Microarray DNA Printing"

Kurt Hansen - "An Analysis of the Intraseasonal Variability in 2008 Atlantic Tropical Cyclone Activity"

Natalina Iamarino - "Global Life Expectancies, An Underdeveloped World Crisis"

Julius Judd - "Targeting of Breast Cancer Stem Cells with Pomegranate Phytochemicals"

Timothy LaRock - "Adaptive Power Load Balancing in Cellular Networks"

Adetola Oloruntoba - "Potential Obstacles to Psychological Treatment Success in Adults: Client Characteristics"

Michael Palmer - "Campus Unrest 1969-1970"

Alexmarie Poteralski - "Americanized Orthodox or True Eastern Orthodox in Cohoes New York?"

Victoria Robertson - "Language Variation and Language Attitude in Chilean Spanish"

Dilan Samarasinghe - "Protecting Communications by Leveraging IPSecurity Tunnels"

Brittany Stinson - "Superpredators or Wayward Youths: Do Stereotypes about Juvenile Offenders Differ as a Function of Juveniles' Race and Gender?"

Kendra Van Valkenburg - "Survival Processing in the Stroop Paradigm"

Annette Vernon - "The Relationship between Positive Parenting Experiences in Childhood and Perpetration of Violence in Adult Dating Relationships"

Samantha Winzenried - "International Dating Violence Study: A Look between Parental Status and Psychological Aggression"

Welcome and Award Presentations 4:00-4:30

James Dias Ph.D., Vice President for Research

Presentation Session 4:45 – 6:15

Please See Abstract Section for Abstracts of Presentations

LC 3A: Informatics, Information Science, and Information Technology

Holden Shapira - "Implementing IPsec to Establish Secure Tunnels and Communications"

Zachary Burns - "Using Internet Protocol Security (IPSEC) to Create Tunnels and Secure Network Communication"

Jenna DonVito - "Using Internet Protocol Security to Create Tunnels to Communicate Securely on a Network"

David Francois - "IPSEC, a Difference in Privacy"

LC 3B: Biology

Weihao Wang - "A Role for the PAR-family Proteins and Rac1 in Basement Membrane Organization and Myoepithelial Cell Differentiation"

Rebekah Pierce - "Use of a pH-Sensitive Probe to Study the Role of PKC-epsilon in Phagocytosis of Pathogens"

Mary Njie - "Identifying Genes that Affect Lactococcus Lactis Intron Mobility"

Samantha Kahn - "The Role of the RCK/p54 Nuclear Localization and Nuclear Export Signals on Hepatitis C Virus Infection"

LC 3C: Biology and Chemistry

Spencer Weintraub - "Structure-activity Relationship Studies of Small Molecules Directed Against the T-box Specifier Loop"

Megan Gura - "Differential Splicing of the SOCS2 5'UTR, a Gene Involved in Successful Central Nervous System Axon Regeneration"

Doris Chen and Zubair Syed - "Synthesis of Small Azide Ligands for the Construction of Metal-DNA Hybrid Catalysts"

Kelly Gordon - "New Reactions of Fluorinated Hypervalent Sulfur Compounds"

Please join us for refreshments in the hallway by LC-3B after the research presentations.

LC 4: English

Sarah Connor - "The Writings on the Walls: Demystifying Contemporary Street Art"

Emily Lange - "The Ties Among Submarines, Time Machines, and Marriage Plots: Revisiting the Scientific Romance"

Olga Neroni - "Unveiling Fantasy in the American Gothic"

LC 5: Public Health

Carlos Sosa - "Palliative End of Life Care for HIV/AIDS Patients, Successes and Shortfalls"

Morgan DeVuyst and September Johnson - "HIV/AIDS Indicators with Specific Regard to Injecting Drug Users"

Christina Ehret - "Injecting Drug Users and HIV in Afghanistan"

Katherine Waye - "Outpatient Care for Substance Use and Related Harms in Turkey"

LC 6: Psychology, History, and Political Science

Kelsey O'Leary - "Resveratrol as a Therapy for Diet-Induced Obesity and Diabetes: Cognitive and Molecular Impact"

David Ostergren - "Cochineal: A Small Creature with a Large Influence"

Joshua Tschantret - "World-Systems Theory and the Rise of Suicide Terrorism: A Mixed-Methods Approach"

Please join us for refreshments in the hallway by LC-3B after the research presentations.

Partial Funding for the Undergraduate Research Conference is provided by University Auxiliary Services.

2015 Presidential Undergraduate Research Award Recipients

Daniel Bollen: Biochemistry and Molecular Biology: "Identification of Yeast Cellular Factors in Group II Intron Silencing"

Faculty Mentor: Professor Marlene Belfort

Sarah Connor: English: "The Writings on the Walls: Demystifying Contemporary Street Art"

Faculty Mentor: Professor Paul Stasi

Samantha Kahn: Biology: "The Role of the RCK/p54 Nuclear Localization and Nuclear Export Signals on Hepatitis C Virus Infection"

Faculty Mentor: Professor Cara Pager

Emily Lang: English: "Revisiting the Scientific Romance: The Failure of Science Fiction"

Faculty Mentor: Professor Erica Fretwell

Timothy LaRock: Computer Science: "Assessing the Challenges of the Rural Elderly through a Social Work Lens"

Faculty Mentor: Professor Petko Bogdanov and Professor Mariya Zheleva

Mary Njie: Biology: "Identifying Genes that Affect Lactococcus Lactis Intron Mobility"

Faculty Mentor: Professor Marlene Belfort

Olga Neroni: English: "Unveiling Fantasy in the American Gothic"

Faculty Mentor: Professor James Lilley

Kelsey O'Leary: Psychology: "Resveratrol as a Therapy for Diet-Induced Obesity and Diabetes: Cognitive and Molecular Impact"

Faculty Mentor: Professor Ewan McNay

David Ostergren: History: "Cochineal: A Small Creature with a Large Influence"

Faculty Mentor: Professor Kendra Smith-Howard

Joshua Tschantret: Public Policy and Administration: "World-Systems Theory and the Rise of Suicide Terrorism: A Mixed-Methods Approach"

Faculty Mentor: Professor Bryan Early

Kendra Van Valkenburg: Psychology: "Survival Processing in the Stroop Paradigm"

Faculty Mentor: Professor Jeanette Altarriba

Annette Vernon: Social Welfare: "The Relationship between Positive Parenting Experiences in Childhood and Perpetration of Violence in Adult Dating Relationships"

Faculty Mentor: Professor Young Do

Weihao Wang: Biology: "A Role for the PAR-family Proteins and Rac1 in Basement Membrane Organization and Myoepithelial Cell Differentiation"

Faculty Mentor: Professor Melinda Larsen

Katherine Wayne: Public Health: "Outpatient Care for Substance Use and Related Harms in Turkey"

Faculty Mentor: Professor Kamiar Alaei

Samantha Winzenried: Social Welfare: "International Dating Violence Study: A Look between Parental Status and Psychological Aggression"

Faculty Mentor: Professor Young Do

Abstracts

Arranged by Session and Room

All project titles and abstracts are printed as received.

Poster Session

Nikisha Benjamin: Department of Psychology: “Working Conditions During the Early Nineteenth Century”
Faculty Advisor: Professor Maeve Kane

We all know or heard about the great triangle fire, on March 25th 1911, around closing time a fire started in the Triangle Waist Factory leaving one hundred and forty six workers dead and many injured. It was one of the greatest incidence in US history, which had a huge impact on workers and working conditions. This proposal will show, that a lot could be done to save many lives. Simple improvement life fire escapes, stable ladders, proper vents for air circulation and had less crowded work space. Many documents used to prove that poor working conditions and negligence of the employers were the cause of deaths of many workers. Documents from Cornell’s online archive, photos, audio recordings of witnesses, songs made in remembrance of the event, nonfiction books as, *A living wage* by Laurence Glickman and *The Radium Girls* by Claudia Clark. Something interesting which caught my attention going deeper in my research I realized that the Radium story was similar to the Triangle factory fire; they both spoke about poor working conditions and employers negligence which lead to many workers death while working at the factory. From my research I argue that the employers could have done much more to ensure the safety and health of their workers. But yet nothing was done to improve the working conditions of the factories. The employers careless about the workers, even if they saw the signs of incoming disasters. The employers were to blame for the death of so many workers; evidence showed that they knew of the poor working conditions and health hazards of the factory. Developing the economy and money in their pockets was more important than the safety of the workers.

Casey Biederman: College of Nanoscale Science and Engineering: “Self-assembling Hydrogels for 3D Monolayer Cell Growth: The ‘Bio Roll-Up’ Project”
Faculty Advisor: Professor Robert Brainard

Tissue engineering is a field that continues to develop novel methods for fabricating artificial tissues and organs. The Bio Roll-Up project focuses on the scaffold stage of tissue engineering. The goal of the project is to create scaffolds from a stack of self-assembling hydrogels that will be used to make artificial blood vessels and salivary glands. Hydrogels are crosslinked, hydrophilic polymers that swell when placed in water. There are four layers in the stack: an underlayer, a “sticky layer,” and two biolayers. The stack is made by spin coating different hydrogel photoresists onto a silicon wafer. Photoresists are materials that can be formed into any pattern upon exposure to ultraviolet light. The layers are exposed to ultraviolet light through a mask and the unexposed areas are washed away. Once developed, the stack is submerged in a buffer solution that mimics human body conditions. The biolayers consist of hydrogel polymers that swell differentially when placed in a buffer solution. The first biolayer has a lower crosslinking density than the second biolayer, which causes the first biolayer to swell more than the second biolayer. The stress that results from this differential swelling initiates the roll-up of the system into a tube shape.

Devin Caravello: Department of Psychology: “Why So Serious? The Impact of Integrating Humor into Math Instruction”
Faculty Advisor: Professor James Bosewell

In 2012, the United States ranked 27th among the 34 Organization for Economic Co-operation and Development (OECD) nations (Program for International Student Assessment [PISA], 2012). Research has also shown that humor impacts education and learning (Hackathorn et al., 2011; Wanzer et al., 2009; Ziv, 1988). This encouraged us to see if humor could impact the learning of math. We used block randomization to divide our 128 participants into two equal groups of 64. We conducted a univariate ANOVA with percentage correct on the post-test as the dependent variable. Condition was entered as a fixed factor and we controlled for percentage correct on the pre-test and state anxiety levels. Contrary to our hypothesis we did not observe a statistically significant difference between the humor group and the non-humor group, $F(1,116)=0.207$, $p=.65$, $\eta_p^2=.002$. A chi square test showed that participants in the humor group were significantly more likely to report finding the instructions humorous, $\chi^2(1)=35.07$, $p<.01$. However, there was no significant difference between the groups on perceived helpfulness, $\chi^2(1)=.29$, $p=.59$. Therefore demonstrating that the core instructional content was perceived similarly between the two groups. Although we did not find humor to facilitate learning, it did not have a deleterious effect.

Cristin Ciaravino: Department of Biology: “Invasive Species Invasion- Trail View State Park”

Faculty Advisor: Professor George Robinson

Trail View is a 7.4-mile linear park located on Long Island, New York. This state park serves as a link between the Nassau and Suffolk County Green Belt Trail. It is a favorable and regularly visited park of the state. I conducted research surveys to guide invasive plant species management. Data collection was assisted via GPS mapping. The invasive plants, being that, were inputted into the online database www.iMapInvasives.org, for which proper utilization was assured by previous training. The extensive field studies completed and the data collected were and are being used to analyze the distribution patterns and ecological features of the park. With help from park staff, the critical plant species will be identified and the conservation of the natural resources will be amended accordingly. The observations made and the number of species mapped will then be addressed based upon priority. The primary objective is to characterize the individual plant community and its spatial distribution patterns in Trail View. With this information, a management program can be suggested.

Erin Gardner: Department of Psychology: “Effect of College Stress and Racial Discrimination on Black Student Well-Being”

Faculty Advisor: Professor Hazel Prelow

The transition from high school to college is a stressful developmental period for many students. College students face academic deadlines, manage new social relationships, and deal with difficult financial issues which all cause significant stress (Keyes et al., 2011). Minority students, including African American students face an additional stressor known as racial discrimination, which can negatively impact their personal well-being. Sellers and colleagues (2006) have found that racial discrimination is significantly associated with psychological distress, including depression. However, past research has failed to look at whether college stress and racial discrimination interact to exacerbate levels of depression and life satisfaction. This study analyzed whether racial discrimination moderated the effects of college stress on depression and life satisfaction using a sample of 238 African American college students. Regression analyses showed that college stress was significantly associated with depression and life satisfaction while racial discrimination was not. In addition, racial discrimination did not moderate the association between college stress and depression and life satisfaction. Gender differences were also examined with males endorsing higher levels of racial discrimination compared to women. These results show that for this sample, college stress is a more salient stressor compared to racial discrimination for African American college students.

Justin George: Department of Chemistry: “Pallet Fabrication Techniques for 2D Microarray DNA Printing”

Faculty Advisor: Professor Jun Wang

Printing of DNA molecules set up in a microarray arrangement provides for a better analysis of gene expression profiling, sequencing, and disease diagnosing. Prior techniques commonly used for printing of DNA molecules includes spotting of selected fragments of DNA, and photolithographic techniques associated with light activated chemistry. Target surfaces have to be attractive for a selected DNA molecule to bind to its solution, but not so attractive in which the removal of the DNA stamp is disrupted from the target surface. Using a stamp made of poly (dimethylsiloxane), the DNA was planted on its surface, washed with a buffer solution, dried with Nitrogen, and then printed on the target surface. Pallet Fabrication techniques tested for successful printing of DNA included the use of 1002 F photoresist film, APTES, micro contact with Silica beads, Ostemer Pallets, Omnicoat with 1002 F, Salinization of 1002 F under vapor coating with hexamethyldisilazane, and Poly - L - Lysine coating of the slides. After spinning targeted surface on a glass slide, pre-baking, UV exposure, post baking, and development of the pallets on the glass slide, selected DNA molecules were printed on the target surface to be tested for successful printing and transfer of DNA.

Kurt Hansen: Department of Atmospheric Science: “An Analysis of the Intraseasonal Variability in 2008 Atlantic Tropical Cyclone Activity”

Faculty Advisor: Professor Kristen Corbosiero

The necessary ingredients for tropical cyclone formation have been well documented: low vertical wind shear, warm water, a moist atmosphere, and a pre-existing disturbance. Certain modes of tropical intraseasonal variability, such as Kelvin waves and the Madden Julian Oscillation (MJO), are associated with the favorable conditions needed for tropical cyclogenesis and have been linked to enhanced periods of tropical cyclone activity. However, the prediction of tropical cyclone formation more than a week in advance is poor and additional research is needed. The goal of this study is to determine the factors responsible for intraseasonal variability in 2008 Atlantic tropical cyclone activity. The Interim European Centre for Medium-Range Weather Forecasts Re-Analysis (ERA Interim) and National Oceanic and Atmospheric Administration (NOAA) outgoing longwave radiation (OLR) data are used to create plots of vertical wind shear, relative humidity, and OLR over the Atlantic Ocean before, during, and after an active period of tropical cyclone activity from late August to mid-September 2008 when five tropical cyclones formed, each progressively further east. The eastward propagation of tropical cyclone formation location and OLR anomalies suggest that the MJO helped create a favorable environment for tropical cyclone activity. However, tropical cyclone activity ended abruptly when a midlatitude trough migrated into the tropics. Vertical wind shear and dry air increased drastically as a result of the midlatitude trough, which inhibited additional tropical cyclone development. In their totality, these results suggest that tropical cyclone activity can be substantially modulated by both phenomena internal and external to the tropics.

Natalina Iamarino: Department of Globalization Studies and Geography: “Global Life Expectancies, An Underdeveloped World Crisis”

Faculty Advisor: Professor Jacqueline Quevedo

This study examines the discrepancies among nations in regards to life expectancies of those in the given population. The dramatic differences in the expectancy rates that are examined between developed and undeveloped nations are of particular importance while pursuing basic human rights and equality throughout the globe. This comparative approach looks at countries with specifically low expectancy rates, those specifically within Africa. To explore the reasons for this imbalance, different approaches are considered, ultimately coming to a consensus regarding unstable governments and lack of basic human rights. This study takes an in-depth look at particular countries life expectancy rates through the eyes of uninformed public-measuring levels of health, urbanization and stability. The initiative to increase life expectancy rates throughout the developing world is not to support rapid population growth, but to give the living a chance to live.

Julius Judd: Biochemistry and Molecular Biology: “Targeting of Breast Cancer Stem Cells with Pomegranate Phytochemicals”

Faculty Advisor: Professor Ramune Reliene

The cancer stem cell (CSC) model explains the observation that there are a subset of cells within a given tumor population that exhibit the stem-cell-like ability to self-renew. The CSC model postulates that CSCs are responsible for disease progression, recurrence, metastasis, and resistance to chemotherapy. We study chemopreventive effects of pomegranate extract (PE), a polyphenol mixture from pomegranate fruit. We verified that two cell lines, HMLER and Hs578T, both exhibit hallmarks of CSCs including mammosphere (MS) formation under non-adherent conditions and high percentage of CD44⁺CD24⁻ cells. We found that PE inhibits MS formation in both cell lines. We observed that PE has the novel effect of resolving MS to attached monolayer morphology. Gene expression studies revealed that PE downregulated genes involved in CSC maintenance and epithelial mesenchymal transition (EMT), which is activated in metastatic cancer and is thought to be responsible for plasticity between CSCs and non-CSCs. Our present studies will verify that PE inhibits CSC self-renewal when serially passaged, further investigate the effect of PE on CSC/EMT genes, and determine the effect of PE on cell migration. We anticipate these studies will demonstrate a novel effect of PE on breast CSCs; and given the availability of PE dietary supplements and pomegranate based foods provide a readily integrated breast cancer risk reduction strategy.

Timothy LaRock: Department Computer Science and Department of Mathematics: “Adaptive Power Load Balancing in Cellular Networks”

Faculty Advisor: Professor Petko Bogdanov and Professor Mariya Zheleva

Load balancing in mobile cellular networks is an important mechanism that enables distribution of demand across neighboring cells, which is critical for better resource utilization and user satisfaction. Current approaches for load balancing are reactive, redistributing users only when the offered load approaches the cell capacity. This approach can lead to deteriorated network performance and user experience. In order to better cater to users, mobile networks need to be proactive and provision resources based on expected demand. To this end we propose a load balancing mechanism that allows for proactive network configuration based on prediction of traffic load. Our approach makes use of power control mechanisms to reconfigure the coverage of a mobile base station and thus control the amount of users and offered load at that base station. We provide discussion of the implications of our proposed system.

Adetola Oloruntoba: Department of Psychology: “Potential Obstacles to Psychological Treatment Success in Adults: Client Characteristics”

Faculty Advisor: Professor James Boswell

Decades of research have demonstrated that psychotherapy is highly beneficial (Lambert, 2013). However, similar to many interventions, including pharmacotherapy, a significant number of treated clients do not experience a positive outcome (Castonguay, Boswell, Constantino, Goldfried, & Hill, 2010). Identifying client characteristics associated with negative psychotherapy outcomes is vitally important. Consequently, we conducted a comprehensive review of the psychotherapy research literature to investigate the baseline client characteristics that have demonstrated direct relationships with unsuccessful treatment outcome, as well as functioned as moderators of specific treatment effects and process-outcome associations. For this review, client characteristics were defined as pre-existing individual differences or traits that clients bring into the psychotherapy context. Based on the research literature and existing conceptual models (e.g., Constantino, Castonguay, Zack, & DeGeorge, 2010), client characteristics were divided into the following categories: demographic variables, expectancies, mental health variables, intrapsychic traits, and interpersonal traits. A number of client characteristics across these domains showed consistent relationships with negative outcomes, yet other commonly hypothesized characteristics evidenced null or mixed relationships with outcomes (e.g., socio-economic status). This poster will present the key findings within each of these client characteristic domains. Implications of research findings for psychotherapy practice and training will also be discussed.

Michael Palmer: Department of History: “Campus Unrest 1969-1970”

My poster will be an extension of a project I am doing for a course I am taking on Digital History. My project will center on the tensions and unrest on the University at Albany campus during the Vietnam Era. Besides the war there was also a lot of racial tension both nationally and locally. Through my research I have noticed that 1969-1970 was a period with a spike in on-campus unrest. I plan to plot the instances of upheaval and use data visualization to illustrate the volume of the occurrences. The key to my research is not simply to give visual evidence of events that occurred on campus. The interesting part about this work is the reactions from the University, especially in the policy changes that followed the upheaval and how the school planned to ease racial tensions. What the school did in the aftermath of demonstrations, protests, and student body/faculty meetings is important to investigate. There will be several questions I plan to answer with my research and presentation, such as; was the school being proactive or reactionary during this time? Were they looking to contain the student protests or give the students a platform to express themselves? Was the University looking to foster progressive change or determined to sustain the status quo? Questions such as these are important because they go past documenting events and explore consequences of said events.

Alexmarie Poteralski: Departments of History and Political Science: “Americanized Orthodox or True Eastern Orthodox in Cohoes New York?”

Faculty Advisor: Professor Nadieszda Kizenko

The research I will be doing is focused on the Eastern Orthodox community of Cohoes during the time period of the founding of the church, St Nicholas in 1914. I am interested in finding out how the community stuck together and remained a part of this specific community and if the “Americanized”. My definition of Americanized is whether the community released a great part of their identity or adopted other aspects since they were in contact with other people and religions. This also could take on the angle of whether the area or religion could be why some groups act differently than others. This topic should be researched because immigration and different communities are a big part of America’s and New York’s history. Cohoes was an area that had different immigrant groups in the area and was developing at this time since it had a textile industry based there. This was why there was enough of a population to form the St. Nicholas church which separated from the Ukrainian church when it decided to become catholic. This shows a determination from a group of people who wish to stick to their roots and stay a part of the tradition of their homelands. The question is whether the environment in New York could have persuaded the community to change and possibly “Americanize” and accept new aspects or if they truly stuck to their religion and traditions. One way to look at this question is by going through the primary documents to look at the progression of the group and individuals and their families. Also looking at the growth or depression of the population of the community could show how people reacted in the community.

Victoria Robertson: Department of Language, Literatures and Cultures: “Language Variation and Language Attitude in Chilean Spanish”

Faculty Advisor: Professor Lofti Sayahi

Every language, dialect, or linguistic variety holds a certain level of prestige. In many cases, speakers of certain dialects find that their language does not hold as much power or value as others because it is not considered the ‘standard.’ Therefore, the attitude of these speakers in regards to their dialects is often reflected in their metalinguistic comments. Upon interviewing a group of Chileans in Santiago, Chile, I found that the great majority of them have a low view of their dialect, believing that because it diverges from Standard Spanish it holds less value. Many of them cited the aspiration or the deletion of final /s/, a very common trait in many Spanish dialects of Latin America and Spain, as the source of their negative attitude toward their language. In this study, I analyze recorded interviews with 11 Chileans to show that while the aspiration or deletion of the /s/ is a common trait in Chilean Spanish, it does not occur with nearly as much frequency as many Chileans seem to think. As a result, I look to question Chilean’s attitude toward their dialect.

Dilan Samarasinghe: Department of Computer Science: “Protecting Communications By Leveraging IPSecurity Tunnels”

Faculty Advisor: Professor Jeff Baez

In an era of greatly increased surveillance, by both our own government as well as foreign threat actors, it has become critically important to protect our communications. Whistleblowers such as Edward Snowden and Julian Assange have shown us that our communications are very much unprotected, despite the utilization of current technology. The problem lies in the implementation of the technology rather than the technology itself. Another problem is the lack of defense created around internal communication and the focus being on communications from outside into our networks. IPSec is a protocol that exists at the IP layer, 2nd layer, on the 7 layer ISO network model. Much of the protections we use, operate at higher level, which makes the communication more vulnerable. IPSec is a technology that has existed for quite a while, however due to the possible complexities associated with the protocol; it is often either not used or used incorrectly. We aim to solve this problem by creating an easy to use program that presents simple options to the user. By utilizing the program created by us, you establish a tunnel between two computers that sends all communication between those two computers through a secured tunnel.

Brittany Stinson: School of Criminal Justice: “Superpredators or Wayward Youths: Do Stereotypes about Juvenile Offenders Differ as a Function of Juveniles’ Race and Gender?”

Faculty Advisor: Professor Cynthia Najdowski

Increasingly, juvenile offenders who commit serious crimes are transferred to adult criminal court where their cases may be tried by jurors. Although the criminal justice system assumes that jurors can disregard their preexisting beliefs while making case judgments, past research has shown that jurors’ decisions are influenced by their stereotypes about juvenile offenders. On one hand, jurors may label juvenile offenders as superpredators, who they believe have a pattern of repeat offending and high recidivism potential. On the other hand, jurors may label juvenile offenders as wayward youths, who they believe are likely to be first-time offenders and amenable to rehabilitation. The research I will present examined whether stereotypes of juvenile offenders differ depending on the race and gender of the juvenile. Because of stereotypes that associate crime with African American men, I predicted that African American boys would be more likely to be labeled as superpredators than White boys or girls of either race. To test this hypothesis, students and community members completed an experimental survey assessing their reactions to a juvenile who was implicitly portrayed as either African American or White and male or female, general beliefs about crime, and demographics. Results and implications will be presented.

Kendra Van Valkenburg: Department of Psychology: “Survival Processing in the Stroop Paradigm”

Faculty Advisor: Professor Jeanette Altarriba

Word memory was compared across five conditions that varied in depth of processing: survival, pleasantness, naming the color of the word, naming the color of a letter within the word, and the classic Stroop task of naming the color of a word. All participants read the survival passage, except those in the pleasantness-rating condition and classic Stroop task, and encoded the same set of 32 words (Nairne et al., 2007). Then, they engaged in a brief distractor task, followed by a surprise free recall task. Our findings replicate the survival advantage and indicate that deeper processing enhances memory, but not Stroop, performance.

Annette Vernon: School of Social Welfare: “The Relationship between Positive Parenting Experiences in Childhood and Perpetration of Violence in Adult Dating Relationships”

Faculty Advisor: Professor Young Do

Dating Violence is the perpetration of violence within a dating relationship. Negative experiences in childhood have been linked to dating violence through much research. This is often explained by Socialization theory (Bandura, 1971) which posits that observing and experiencing a pattern of behavior during childhood can lead to the adoption of that pattern of behavior as adults. Drawing from this theory, individuals who experience positive parenting in childhood learn and develop a supportive relationship style and, therefore, should be less likely to commit violence against a dating partner as adults. This project examines the relationship between positive parenting during childhood and dating violence among university students using data from the International Dating Violence Study (IDVS). The IDVS collected information from a sample of over 14,000 university students in 32 countries. Data will be analyzed using the SPSS statistical package. The results and their implications for social work research, practice, and program development will be presented.

Samantha Winzenried: School of Social Welfare: “International Dating Violence Study: A Look between Parental Status and Psychological Aggression”

Faculty Advisor: Professor Young Do

Dating Violence occurs in many forms and can be committed by anyone (Wekerle & Wolfe, 1999). According to the Centers for Disease Control and Prevention there are four core types of intimate partner violence: physical violence, sexual violence, threats of physical or sexual violence, and psychological/emotional violence (Intimate Partner Violence: Definitions, 2014). This project study examines the relationship between current parental status and psychological aggression toward a partner. Data are drawn from the International Dating Violence Study collected from more than 14,000 students in 68 universities in over 30 countries worldwide (Straus, International Dating Violence Study, 2001-2006, 2011). Information were collected using two different scales the Personal and Relationship Profile (PRP) and the Revised Conflict Tactics Scale 2 (CTS2). The data will be analyzed using the SPSS statistical package. The results and their implications for social work research, practice, and program development will be presented.

Presentation Session

LC 3A: Informatics, Information Science, and Information Technology

Holden Shapira: Department of Information Science: “Implementing IPsec to Establish Secure Tunnels and Communications”

Faculty Advisor: Professor Jeffery Baez

Cyber security has become increasingly important in our everyday lives. Many people are unaware that their private and sensitive information is not secure. Recently, Edward Snowden leaked classified documents from the NSA regarding their surveillance practices of our personal information. These documents revealed that the NSA was spying on millions of Americans and taking away their data privacy. In addition, the Fapping occurred in August, 2014 where many celebrities were victims to a massive invasion of privacy. Approximately 500 private photos of celebrities were obtained from Apple’s iCloud service from hackers and were posted on various websites and social networks such as Imgur and Reddit. This has shown us that our communications aren’t secure. The implementation of a secure internet communication is vital. As a team, our mission is to use IPsec to create secure tunnels to communicate with each other. IPsec uses cryptographic security services and authenticates and encrypts each IP packet to protect communication within a network. We plan to solve this problem by establishing secure tunnels between our computers so our information is protected. This is our strategy to minimize any security vulnerabilities in our computer systems.

Zachary Burns: Department of Informatics: “Using Internet Protocol Security (IPSEC) to Create Tunnels and Secure Network Communication”

Faculty Advisor: Professor Jeffery Baez

Between Edward Snowden’s whistleblowing on the NSA and the recent photo hacks of celebrities, secure internet communication is becoming more important by the day. We are implementing IPSEC in a novel way to authenticate, encrypt, and transfer packets in a communication session. These tunnels are a secure session between multiple IP addresses where the communication is protected. This changes how communication over a network operates because the messages sent within the tunnel can be stolen and eavesdropped, like all network traffic, but doing so is useless without being able to decrypt the packets from our sessions. To complete our work, you must first run a program in which you can input IP addresses. Second, you input any IP addresses you wish to create a tunnel with. Finally, you use a secure proxy server which you can use to gain access to the internet outside of the tunnels. With people becoming paranoid about the NSA or other government agencies spying on them, the work of our group will help bring people piece of mind. The tunnels give control to the user so they know where their data goes. The security is in their hands and not a third party provider. The use of IPSEC and the tunnels will protect not only the people, but also businesses and corporations because the lack of security costs more than paying for it. There is a potential market for secure technologies because of the need in today’s world.

Jenna DonVito: Department of Informatics: “Using Internet Protocol Security to Create Tunnels to Communicate Securely on a Network”

Faculty Advisor: Professor Jeffery Baez

We are implementing IPSEC in a new way. We want to be able to communicate through tunnels which are created on a common network. This will benefit many companies, corporations, and businesses because they will be able to securely communicate data from their business without anyone outside the network spying or eavesdropping on their data. By using IPSEC, the packets that are being sent across the network are encrypted. In order to create secure tunnels, you must run a program to enter any IP addresses you would like to create tunnels with. You must then use a secure proxy server to connect to the internet outside the tunnels. Using these tunnels, users will be much more comfortable with sharing their data over their network because they have the power through the tunnels instead of someone on the outside.

David Francois: Department of Information Technology: "IPSEC, a Difference in Privacy"
Faculty Advisor: Professor Jeffery Baez

With ever increasing technological advances; it is becoming evident in light of events such as Edward Snowden with leaks in the NSA, Sony pictures along with commercial retailers such as Target and home-depot hacked, and increasing celebrity photo hacks. It is clear that our technological future lives within the shadow of a security theater with thoughts like "my car is locked so it is now impossible to steal" and it is this false sense of security along with an utter lack of awareness that makes us all equally vulnerable as well as a possible target. By implementing Internet Protocol Security (IPSEC) to create tunnels within our networks we can freely and safely communicate across any network, IPSEC does this through cryptography security services. It also supports network-level peer authentication, data origin authentication, data integrity, and replay protection. So by authenticating packets that are being transferred across a network within these secure tunnels, communication between multiple IP addresses is protected from eavesdropping and from any sensitive information being stolen. Allowing peoples private life to remain as such, prevent companies from leaking our personal information and most importantly a safe way to communicate from send to open.

LC 3B: Biology

Weihao Wang: Department of Biology: "A Role for the PAR-family Proteins and Rac1 in Basement Membrane Organization and Myoepithelial Cell Differentiation"

Faculty Advisor: Professor Melinda Larson

The mouse submandibular salivary gland (SMG) undergoes a developmental process called branching morphogenesis in order to gain the necessary complexity required for saliva secretion. In the developing SMG, the outermost epithelial cells are thought to differentiate into a specialized cell type known as the myoepithelium. The myoepithelial cells provide directional constriction of the saliva producing acinar cells during saliva secretion while maintaining contact with the surrounding specialized extracellular matrix, or basement membrane (BM). The basal deposition of the BM by these outer epithelial cells is known to be regulated by the PAR polarity family protein, Par-1b. I am investigating the role of Rac1, a Rho GTPase, in the function of Par-1b. I hypothesize that Rac1 acts upstream of the Par1b and is required for the differentiation of the polarized epithelium in the developing mouse SMG.

Rebeka Pierce: Department of Biology: "Use of a pH-Sensitive Probe to study the role of PKC-epsilon in Phagocytosis of Pathogens"

Faculty Advisor: Professor Michelle Lennartz

Protein Kinase C-epsilon (PKC- ϵ) is necessary for efficient phagocytosis. PKC- ϵ is involved in several responses to Fc γ R ligation, including uptake of pathogens (phagocytosis). To understand the role of PKC- ϵ during phagocytosis, we have compared phagocytosis of pathogens by wild type and PKC- ϵ knock out macrophages. To test the hypothesis that PKC- ϵ is necessary for phagocytosis of pathogens, we compared the uptake rates of the wild type macrophages with their PKC- ϵ knock out counterparts. We tested the uptake of *E. coli* and yeast (zymosan) as physiologically relevant pathogens. Additionally, we tested the uptake of IgG-opsonized *E. coli*, to determine the involvement of PKC- ϵ in uptake of bacteria through the Fc receptor (Fc γ R). We used *E. coli* and zymosan conjugated with pH-sensitive fluorescent dye pHrodo™ and flow cytometry to calculate the rate of uptake in wild type and PKC- ϵ null macrophages. The macrophages were treated with the conjugated pathogens, fixed at varying times (0-30 min) and cell associated fluorescence quantified by flow cytometry. We calculated the rate of phagocytosis by plotting the macrophage fluorescence against time, to determine the effect of PKC- ϵ expression on that rate.

Mary Njie: Department of Biology: "Identifying Genes that Affect Lactococcus Lactis Intron Mobility"

Faculty Advisor: Professor Marlene Belfort

A gene consists of coding and non-coding segments. Non-coding segments, introns, are spliced out in order to code a functional gene. Evolutionarily, spliced introns and the factors that affect mobility is an important field of study also having medical implications. For this study, the genome of the *Lactococcus lactis* bacterial strain, IL1403 and the group II intron of our interest, L1.LtrB are utilized. L1.LtrB moves into new sites on DNA by a process termed retrotransposition (RTP). Our goal is to identify genes that regulate retrotransposition of L1.LtrB in *L. lactis*. To do this, we are making a transposon mutant library in *L. lactis* strain IL1403 using the pG+host::ISS1 plasmid introducing the ISS1 transposon into the genome. We have also developed a method to screen mutants for RTP levels via hybridization. ISS1 will interrupt specific genes revealed through high throughput Illumina sequencing technology. So far we have isolated several hundred IL1403 ISS1 mutants and these mutants will be used in RTP assays to determine the degree by which certain genes affect L1.LtrB intron mobility. Those genes can be further analyzed to verify their effects via gene recombineering. Strategic cloning of the nisR and nisK genes into the in the pJP005 recT plasmid will allow for recombineering and creation of "clean" mutants in IL1403.

Samantha Kahn: Department of Biology: “An Ideological Schism: More Regulation or Less?”
Faculty Advisor: Professor Cara Pager

Hepatitis C virus (HCV) is a predominantly blood-borne virus that affects approximately 3.2 million persons in the United States. Those infected are at a heightened risk for cirrhosis of the liver and hepatocellular carcinoma. Although the new antiviral drug treatments targeting the viral protease and polymerase hold much promise for a cure, our understanding on the virus and the interactions with the host cell is incomplete.

HCV gene expression and virus assembly, as discovered by the Pager lab, requires RCK/p54 during infection. RCK/p54 is a DEAD-box helicase involved in microRNA gene regulation, translational repression, and mRNA storage and decay. RCK/p54 contains a lysine-rich nuclear localization signal (NLS) and a leucine-rich nuclear export signal (NES) localized at the N-terminal region. Both the NLS and NES allow RCK/p54 to be shuttled between the nucleus and cytoplasm. I hypothesized that the shuttling of RCK/p54 plays a role in HCV infections. To test this hypothesis I created mutations at these sites to disrupt the ability of RCK to shuttle across the nuclear membrane. My data demonstrated that mutating the NLS did not affect RCK/p54 expression. Interestingly, mutant NLS RCK/p54 migrated in a denaturing polyacrylamide gel higher than the wildtype protein, raising the possibility that the mutant protein might be post-translationally modified. Additionally subcellular fractionation showed that the mutant NLS RCK/p54 protein, as expected, is localized in the cytoplasm. These studies have established the ground work to examine the role of the RCK/p54 nuclear localization signals during HCV infection.

LC 3C: Biology and Chemistry

Spencer Weintraub: Department of Biology: “Structure-activity Relationship Studies of Small Molecules Directed Against the T-box Specifier Loop”
Faculty Advisor: Professor Paul Agris

Drug-resistant pathogens have risen in frequency and lethality, making the development of antibiotics with new targets against multi-drug resistant organisms, such as *Staphylococcus aureus*, imperative. The T-box regulatory mechanism is specific to Gram-positive bacteria and it controls the expression of several amino acid biosynthetic and aminacyl-tRNA synthetase genes. The T-box Specifier loop is a novel target for antibacterial drug discovery as we hypothesize that a small molecule bound to the Specifier loop will inhibit transcription of essential bacterial genes resulting in bacterial cell death or growth arrest. Using *in silico* analysis of the Specifier loop, small compounds that were likely to disrupt T-box function were identified. Bacterial growth arrest studies identified two hits. Based on this data, structure activity relationship studies (SAR) were conducted using disk diffusion assays, minimum inhibitory concentration assays (MIC), and minimum bactericidal assays (MBC) against *S. aureus* and *Escherichia coli* with structural analogs of our initial hits. Using the successful compound structures as a template, another *in silico* docking study was conducted on selected analogs and top candidates of this docking simulation as well as other selected analogs are currently undergoing testing with MIC and MBC assays to further refine structural determinants required for antibacterial activity.

Megan Gura: Department of Biology: “Differential Splicing of the SOCS2 5’UTR, a Gene Involved in Successful Central Nervous System Axon Regeneration”
Faculty Advisor: Professor Ben Szaro

The amphibian *Xenopus laevis* can regenerate axons of its optic nerve even after metamorphosis. Suppressor of Cytokine Signaling 2 (SOCS2) could be involved in the pathway regulating central nervous system regeneration. I found that the 5’ untranslated region (UTR) of SOCS2 contains two splice forms. One splice form contained a previously unidentified 68 base pair exon, which will be referred to as ‘exon 2’. This exon could be involved in post-transcriptional regulation of SOCS2. I performed *in situ* hybridization, RT-PCR, and qPCR to study the mRNA expression of the 5’UTR at different timepoints in optic nerve regeneration. The form of the SOCS2 5’UTR that contains exon 2 is expressed more in the intermediate to late stages of optic nerve regeneration while the form that lacks this exon is associated with the early stages. I hypothesize that the 5’UTR with exon 2 or without it could be functioning as an internal ribosome entry site (IRES), to facilitate translation of SOCS2. I created a bicistronic fluorescent protein reporter plasmid that contains the SOCS2 5’ UTR sequences with and without exon 2. These constructs will be assayed in *X. laevis* embryos and expression of both reporter proteins will indicate IRES activity.

Doris Chen and Zubair Syed: Department of Chemistry: “Synthesis of Small Azide Ligands for the Construction of Metal-DNA Hybrid Catalysts”

Faculty Advisor: Professor Jia Sheng

Developing novel catalysts for highly efficient and regio-/stereo-selective organic reactions plays key roles in modern chemical and medicinal industries. Hybrid catalysis, which combines the high efficiency of active transition metals and the high chirality of biopolymer scaffolds (protein, DNA and RNA), represents a new generation of catalytic strategy. These scaffolds can transfer their chirality and promote a transformation with good enantioselectivity. In the past few years, DNA-based hybrid catalysts have been successfully applied to various asymmetric carbon-carbon or carbon-heteroatom bond-forming reactions including Diels-Alder reaction, Michael addition, Alder reaction and Friedel-Crafts reaction. The stable natural DNA duplexes can offer excellent chiral environment for these reactions. In addition, DNA can dissolve in water and easily be recycled from the reaction mixture. Therefore, in combination with different metals as Lewis-acids, these DNA-based hybrid catalysts can serve as powerful and environment-friendly green catalysts for conventional organic reactions. In this project, we designed and synthesized two novel metal-chelating ligands that can be used to construct metal-DNA more efficiently and specifically comparing to the previous methods. These two small ligands contain an azide group and can be ‘clicked’ into any position that has an alkynyl group in the DNA. Our work will expand the applications of DNA-based hybrid catalysis and facilitate their mechanistic studies.

Kelly Gordon: Department of Biology: “New Reactions of Fluorinated Hypervalent Sulfur Compounds”

Faculty Advisor: Professor John Welch

In spite of the intriguing properties of hypervalent fluorinated sulfur compounds, the preparation of these substances has been largely limited to the synthesis of molecules bearing pentafluorosulfanyl arenes. Nonetheless, preparations of pentafluorosulfanylated aliphatic compounds are increasingly common. Investigations of tetrafluoro- λ^6 -sulfanes where the electronic effects of hypervalent fluorinated sulfur may be modulated by selective substitution are very rare and usually limited in scope. Selective substitution can be a tool for the potential control of reactivity, but synthetic access to the substituted compounds is challenging. Differences in preparative strategies, reactivity and steric effects will be compared and contrasted for λ^6 -pentafluorosulfanes and λ^6 -tetrafluorosulfanes. Application of those effects in the synthesis of new materials will be described.

LC 4: English

Sarah Connor: Department of English: “The Writings on the Walls: Demystifying Contemporary Street Art”

Faculty Advisor: Professor Paul Stasi

This project investigates the worldwide popularity of street art as reflective of a subtle, but significant, shift away from the hierarchal, unrepresentative model of power that exists in Anglo-American capitalist society, towards a model that encourages a collective reclamation of space and dignity. Conversing with a variety of political, cultural, and artistic discourses, I analyze a few pieces of street art by the popular graffitiist, Banksy, in order to demonstrate that his popularity is reflective of the revolutionary shift in consciousness I am arguing is occurring. While the last decade has seen an increased interest in street art, our existing terminology for engaging with it is still lacking due to the art form’s illegality. Yet street art is crucial, I suggest, for understanding an extended culture of discontent and resistance against a society swollen with advanced media and consumerism.

Emily Lange: Department of English: “The Ties Among Submarines, Time Machines, and Marriage Plots: Revisiting the Scientific Romance”

Faculty Advisor: Professor Erica Fretwell

The scientific romance, as a genre, lost its dominance due to the emergence of science fiction. Many now believe that the scientific romance was simply subsumed into science fiction; however, it is still a genre in its own right. Specifically, the scientific romance details the fantastical events and exploits of its protagonist and also utilizes scientific explanations for its technology and events. The science may not always necessarily exist, yet there is always some scientific logic on which the plot depends. This can most easily be seen in the scientific romances of the late nineteenth century: Jules Verne’s *Twenty Thousand Leagues under the Seas*, H.G.Wells’s *The Time Machine*, and Edward Bellamy’s *Looking Backward: 2000-1887*. There is a didacticism present in all these works—Verne’s novel teaches actual science, while Wells and Bellamy champion socialism—which is equal in importance to the romantic elements, like the undersea home aboard the *Nautilus*, the titular time machine or Julian West’s slumber that lasts for over a century. By specifically examining how utopias and dystopias, technology, and gender function in these works, it becomes apparent that they make use of the same tropes and plot devices because they belong to the same specific genre.

Olga Neroni: Department of English: “Unveiling Fantasy in the American Gothic”

Faculty Advisor: Professor James Lilley

Inspired by the subjective label of the “unreliable narrator,” this project explores how this narrative technique can be employed with the purpose of discussing the fragility and problematic subjectivity of social ideology. In selected short stories including “Ligeia,” and the novel *The Sound and the Fury*, Edgar Allen Poe and William Faulkner, respectively, combine the trope of the unreliable narrator with classic gothic themes and images to embody the frightening products of the ideological assumptions of the Antebellum South. These embodiments, seen through the eyes of an affected reporter, provide a detached context for the individual reader to consider the subjectivity and problematic suggestions of her contemporary ideology.

In *The Plague of Fantasies*, Slavoj Zizek charts the relationship between theoretical ideology, fantasy, and ideology in practice. While ideology roots itself firmly in our lives—it crafts our very reality according to Zizek—it is paradoxically fragile and self-destructive. We consume and perpetuate fantasy in order to elucidate and internalize the laws of ideology. In turn, fantasy often draws these laws to their conceptual edge, granting bodies and voices to a given society’s deepest fears and desires. The selected fantastical short stories of Edgar Allen Poe and William Faulkner’s *The Sound and the Fury* employ the perspective of a problematically labeled “unreliable” narrator to combine these fears and desires into singular complex bodies. Consequentially, these embodiments of the abstract provide a private, detached context for a reader to practice the act of questioning her ideological assumptions beginning with empathy for the suffering and difficulty in communication of another within her own apparatus. In order to gain understanding of a narrative topography using only the senses of an unconventional other, one must first seek to understand the difficult perspective of the seer.

We see this type of difficult perspective and objectification in the obsessive and fearful manner with which Poe’s narrators speak of their muses. The often dismissed narrators of Edgar Allen Poe’s “Ligeia” and “The Fall of the House of Usher” claim sanity while describing the insane and impossible. They recollect bizarre characters who simultaneously possess all of the qualities of ideal feminine beauty of the Antebellum South, yet resemble classic gothic monsters angrily rising from the grave. Remarkably, Poe’s narrators subversively describe their breathtaking beloved in the same complex rhetoric used to encourage slavery and to express anxiety over racial mixing in the Antebellum United States, thus problematizing the abstract ideals of relationship that depend on love and service.

More recent works, like William Faulkner’s *The Sound and the Fury*, remove the physical image of a classic gothic monster from the readers’ attention. Faulkner instead stages the narrative as the thoughts of several unconventional narrators who embody the drama of a waning ideological system. The Compson men struggle to watch how time erodes their noble family after the Civil War with three very different understandings of temporality. Meanwhile, Dilsey Gibson and her family, who maintain the Compson household, biblically see and understand the entire series of events without crumbling. Remarkably, the family who do not subscribe to or benefit from the old ideology prove to be the most hardy and content. This project explores further, including the above examples, how American gothic authors combine common gothic tropes with the intimate “unreliable” first person perspective to exposit the problems of codifying complex human experience through the veil of ideology. Subsequently, this exploration provides a starting point for productive dialogue regarding the historically subjective nature of normality, and hopefully suggests a desire for a more nuanced understanding of diverse perspectives.

LC 5: Public Health

Carlos Sosa: School of Public Health: “Palliative End of Life Care for HIV/AIDS Patients, Successes and Shortfalls”

Faculty Advisor: Kamiar Alaei

According to the World Health Organization, palliative care is the “approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial and spiritual”. HIV/AIDS has become a more manageable disease than it was when the pandemic started in the 1980s, thanks to advances in medical research and practices (Huang, 2013). Because people can live longer with HIV/AIDS than they were able to twenty years ago; the symptom management, psychosocial support, communication, and end of life care aspects of palliative care have become very important in improving the quality of life for people with HIV/AIDS. However, HIV/AIDS patients receiving palliative care have a different set of needs than other people who enter palliative care; for example, HIV/AIDS patients are usually younger and come from marginalized or minority groups, which can lead to lack of availability and accessibility for those seeking care (Ludwig et al., 2008). This paper will focus on the great strides that have been made in HIV/AIDS care as well as the challenges that still need to be overcome, through research of relevant literature.

Morgan DeVuyst and September Johnson: School of Public Health: “HIV/AIDS Indicators with Specific Regard to Injecting Drug Users”

Faculty Advisor: Professor Kamiar Alaei

The Universal Declaration of Human Rights guarantees every individual the right to health, meaning that every person has the right to a standard of living adequate for health. This includes food, clothing, housing, medical care and necessary social services without fear of discrimination. Health and human rights are intrinsically linked, one does not come without the other. Those who are HIV+ tend to be discriminated against and drug users who are HIV+ face even more discrimination, a violation of their human rights. Because of this, the main goal of this paper is to assess current health indicators and human rights indicators (variable with characteristics of quality, quantity and time used to measure health impact) with respect to providing adequate HIV/AIDS services to injecting drug users to determine to what extent these two groups of indicators are compatible. We used different sets of indicators to assess to what extent these indicators were similar and where they were lacking. Through our developing research, it will be shown whether newly developed rights-based health indicators with respect to HIV/AIDS among injecting drug users are adequate human rights tools or whether these tools need to be further developed.

Christina Ehret: School of Public Health: “Injecting Drug Users and HIV in Afghanistan”

Faculty Advisor: Professor Kamiar Alaei

Afghanistan has been through a multitude of unfortunate circumstances. The war has taken a horrible toll on many and the consequences from this state of chaos have left health care a low priority. Afghanistan also produces at least 80% of the world’s opium supply. Drug availability is high, and the cost remains low. The total population in Afghanistan is estimated to be 30.55 million. Out of the 1.6 million drug users, based on UNODC (United Nations Office on Drugs and Crime) estimation in 2009, there are up to 23,000 IDU’s (Injecting Drug Users) in Afghanistan. Surveys and statistics are lacking in Afghanistan because there is little information available about the true number of IDU’s and this varies based on the organization that provides the statistics. In addition there is evidence the number of IDU has increased in the country between the years 2008 and 2011 (UNODC, 2013). The growing number of injection drug users, the availability of heroin, and limited numbers of harm reduction and drug treatment programs in Afghanistan put the country at a significant risk for the spread of HIV. We wish to understand the social risk determinants and cultural aspects of HIV and injecting drug usage to gain more insight in order to combat these health issues.

Katherine Waye: School of Public Health: “Outpatient Care for Substance Use and Related Harms in Turkey”

Faculty Advisor: Professor Dolores del Castillo

From 2007 to 2011, drug addiction referrals in Turkey have increased from approximately 16,500 patients to 60,000 (Turkey Drug Report, 2012). Due to the range of physical, psychological and social issues that substance use embodies, Turkey currently faces the difficulty of instituting an effective nation-wide program that combats addiction (Turkey Drug Report, 2012). There are 22 existing governmental addiction treatment facilities called AMATEM centers located in 13 of the 81 provinces of Turkey [1]. With so few facilities, inconsistencies and limitations in obtaining addiction treatment are widespread. Professionals working in addiction centers are not provided with clear standards and expectations for training and treatment, leaving centers with different roles and methodologies on how to treat patients (Turkey Drug Report, 2012). Research to support these findings has been utilized through ongoing discussion with health practitioners in Turkey, utilization of Turkey’s Annual Drug Report (TUBIM), and decomposition of scholarly journals and reviews. Through collaboration with local stakeholders, governmental leaders and health workers, a proposal has been made to establish a pilot plan for outpatient community based centers of excellence (CoE) that integrate substance use and comorbidity treatment. Outpatient CoE are needed in the addiction field, where best practice models can be developed and taught to practitioners. This will result in a replicable intervention model for drug, tobacco, and alcohol addiction throughout Turkey that focuses on prevention, treatment, and social supports, as well as community-based care.

LC 6: Psychology, History, and Political Science

Kelsey O'Leary: Department of Psychology: "Resveratrol as a Therapy for Diet-Induced Obesity and Diabetes: Cognitive and Molecular Impact"

Faculty Advisor: Professor Ewan McNay

Oxidative stress has been implicated as a cause of both diabetes and Alzheimer's disease (AD), including abnormal accumulation of brain amyloid- β . Resveratrol is an antioxidant found in red grapes that has been anecdotally linked to protection against these diseases. We aimed to demonstrate resveratrol's cognitive and neural effects in the context of type II diabetes (T2DM) and AD, and to identify specific molecular effectors that mediate metabolic and cognitive improvement. Resveratrol was administered to rats over 24 weeks, together with a diabetogenic diet. This model mimics clinical findings in humans, where T2DM markedly increases the risk of developing Alzheimer's. Rats were tested on a battery of cognitive tasks, following which tissues (brain, plasma, fat and pancreas) were extracted and measured for specific molecular targets. Resveratrol was shown to be effective at attenuating cognitive impairment: our findings may provide a causal mechanism for the link between T2DM and subsequent AD.

David Ostergren: Department of History: "Cochineal: A Small Creature with a Large Influence"

Faculty Advisor: Professor Kendra Smith-Howard

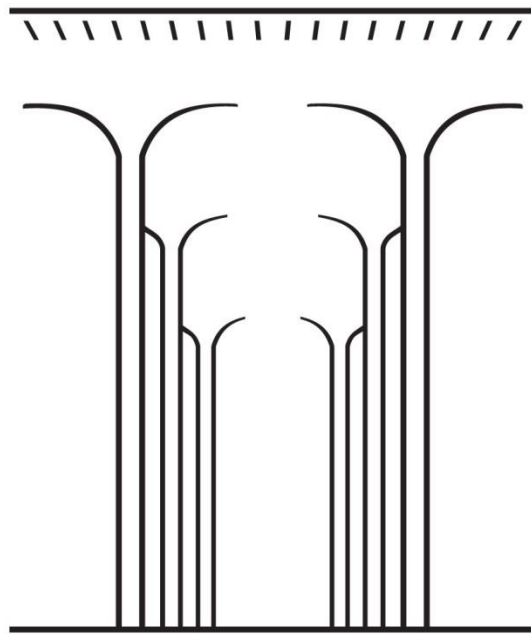
On March 3, 1553, the Municipal Council, or *cabildo*, of Tlaxcala, Mexico met to discuss the growing influence of an insect based dye product known as cochineal. The result of this meeting was a rather lengthy list of grievances against the cultivation of cochineal dye. It seemed to the members of the *cabildo*, nearly all of whom hailed from the indigenous noble families, that cochineal production had caused extensive damage to the social and moral fabric of Tlaxcala. The nobles of the *cabildo* refer to a time "before cochineal was known," during which the moral corruption and social upheaval they refer to were not present. However, the dyeing properties of cochineal were in fact known in the time before the conquest. It was not until Spanish demand drove up the price of crimson-colored dyestuff that cochineal became the hotly traded commodity described by the *cabildo*. The claims of the *cabildo* against cochineal range from the dwindling attendance of church services to the imminent threat of famine born out of the neglect of staple food crops. While evidence to support most of these claims can be found in the records of previous *cabildo* meetings, there is one issue that stands out amongst the rest as being central to the concern of the *cabildo*: the rise of social mobility. For members of the aristocracy concerned with preserving their social and political status, the idea that commoners now had access to means of upward social mobility was no doubt alarming. The *cabildo* concluded this meeting with a limit on the number of nopal cacti, the plant on which the cochineal insect was grown, was permitted to cultivate. Later sources suggest that despite the desire of the *cabildo*, cochineal production would continue to increase in Tlaxcala over the course of the sixteenth century. This failure on the part of the indigenous aristocracy to contain cochineal is indicative of the decay of the political authority of the native elite described by historians such as Charles Gibson. Furthermore, the growing presence of Cochineal in the Tlaxcalan economy worked to erode the social distinction between native elite and native commoner by providing the indigenous commoners with a method of elevating their social status through the accumulation of wealth. The relevance of the cochineal trade in Tlaxcala is therefore twofold, and deserving of a more thorough evaluation than it has previously been given.

Joshua Tschantret: Department of Political Science: “World-Systems Theory and the Rise of Suicide Terrorism: A Mixed-Methods Approach”
Faculty Advisor: Professor Bryan Early

Since the terrorist attacks of 9/11, there has been a substantial expansion of the literature on suicide terrorism and the globalization of terrorism, but few studies have sought explanations of suicide terrorism at the global level of analysis. This study draws upon the hegemonic decline model of global terrorism to propose a link between system reorganization and the highly asymmetrical conflicts in which suicide attacks become viewed as organizationally viable. An empirical test of this proposition is devised using simple descriptive statistics and an ordinary least-squares multiple regression analysis. It confirms that states suffering from chronic state fragility, autocratic rule, and with significant Minority at Risk (MAR) and Muslim populations are especially susceptible to suicide attacks. The second section of the paper introduces an analytical distinction between two waves of suicide terrorism – a national separatist wave and a transnational religious wave. An incorporated comparison analysis of these two waves is conducted to trace the causal pathways connecting hegemonic decline, the observed predictors of suicide terrorism, and the actual occurrence of suicide attacks. It is argued that in both waves terrorist organizations seek political reorganization in the context of protracted state decline, resort to suicide attacks when confronted with a militarily dominant state actor attempting to reincorporate the terrorist-claimed territory, and construct cultures of martyrdom to fulfill the imperative for a steady flow of suicide bombers. Both the inputs and outputs of each wave are differentiated largely by level of intensity, though the transnational network structure of radical Islamist terrorist organizations has in turn made the diffusion of suicide terrorism in the second wave a threat to the stability of the world-system.

Partial Funding for the Undergraduate
Research Conference is provided by
University Auxiliary Services.

The Honors College
at the
University at Albany



*"All experience is an arch
Where thro' Gleams that untraveled world."*

- Tennyson

A Community of Developing Scholars

*University at Albany
1400 Washington Avenue
Albany, NY 12222
Lecture Center 31
442-9067
www.albany.edu/honorscollege
honors@albany.edu*