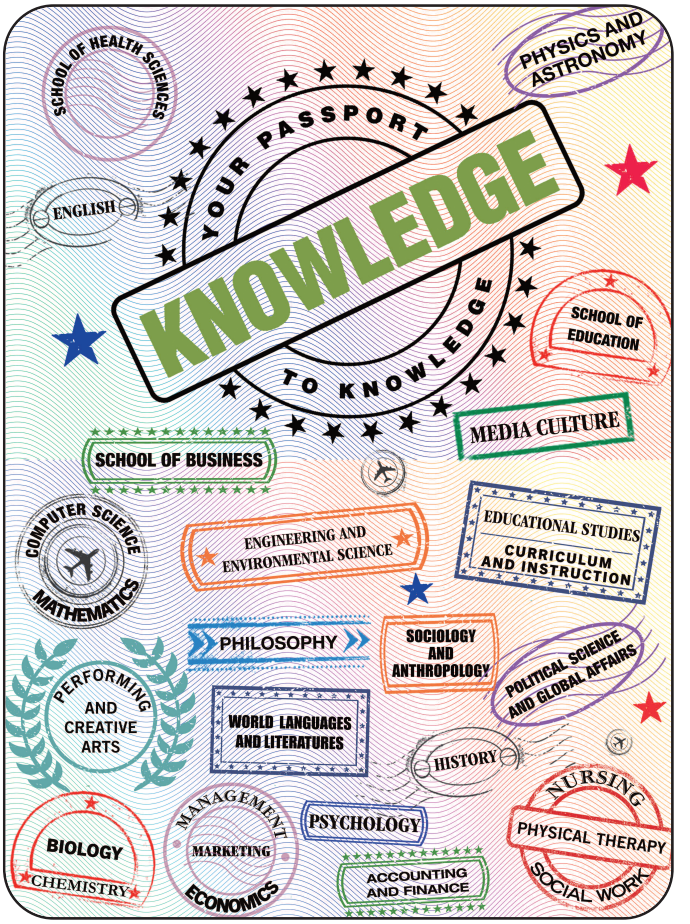
CSI UNDERGRADUATE CONFERENCE

RESEARCH, SCHOLARSHIP, AND PERFORMANCE



THURSDAY, MAY 2, 2019
11:00AM - 4:00PM
Center for the Arts (1P), Atrium

Sponsored by the Division of Academic Affairs with funding from the CUNY Offices of Research and Academic Affairs, the CSI Alumni Association, and the CSI Student Government.

THE CITY UNIVERSITY OF NEW YORK
College of Staten Island

CSI Undergraduate Conference on Research, Scholarship, and Performance 2019

Conference Schedule—Thursday, May 2, 2019

11:15am-12:15pm	Paper Presentations 1P-109
11:30am–Noon	CSI Music Recital Recital Hall 1P-120
Noon–4:30pm	The Art Gallery of the College of Staten Island, 1P-112 • *"Playthings and Performing Objects"* Curators: Professors Edward Miller and Valerie Tevere, Department of Media Culture
12:15pm	Lunch available for participating students and mentors 1P-116 (pick up)
1:00pm–2:00pm	Plenary Session - Williamson Theatre, 1P-111 • Opening remarks from J. Michael Parrish, Provost/ Senior Vice President for Academic Affairs • Keynote Address: Sarolta Takács, Dean of the Division of Humanities and Social Sciences "Emperor Nero Meets Virtual Reality–Ancient is Modern" • Wer hat dies Liedlein erdacht? and Das irdische Leben Gustav Mahler (1860-1911) Maria Zakharycheva, soprano Dr. Sylvia Kahan, piano
2:00pm-4:00pm	Poster Presentations 1P Atrium, East and West Lounges
2:30pm-4:30pm	CSI Student Art Exhibitions Student Art Gallery, 1P-118B
2:30pm-4:30pm	CSI Sculpture Exhibition CFA Atrium - The Glass Case
3:00pm-4:00pm	Music Hour featuring the Jazz Arranging Students of Professor Michael Morreale accompanied by members of the CSI Jazz Ensemble Also featured, the CSI Jazz Repertory Combo Recital Hall 1P-120

CSI Undergraduate Conference on Research, Scholarship, and Performance

Message from the President

It is my pleasure to welcome you to the College of Staten Island's 18th Undergraduate Conference on Research, Scholarship, and Performance.

This annual event is one of the highlights of our academic calendar, showcasing the depth and breadth of knowledge and talent of our students. It also provides an opportunity for us to acknowledge the world-class faculty at CSI who have mentored the students whose work is being presented today.

This year, we have approximately 300 student participants representing research and scholarship across a broad range of disciplinary and interdisciplinary fields, including the creative and performing arts. These students have had the opportunity to work in cutting-edge laboratories and facilities, many supported by prestigious state and federal grants, to work with distinguished faculty mentors across the College, and to engage in authentic collaborations with peers and graduate students. We know that these opportunities are often life-changing, influencing career choices and establishing the foundational steps for future careers in research, scholarship, and performance. Many students here today will go on to research careers of their own, while others will complete professional training in their chosen fields, or choose new directions because of the opportunities they have had. We are proud that so many CSI students have experiential learning opportunities of the very high caliber afforded by our dedicated faculty.

This conference represents a true collaboration across the College community. The CUNY Offices of Research and Academic Affairs, the CSI Alumni Association, and the CSI Student Government have generously supported this conference. I would like to express my sincere appreciation to the students, faculty, and staff who have contributed their time and expertise in the organization and support of today's event.

Congratulations to all participants!

Sincerely,

W J Fritz

William J. Fritz
President

THE DEPARTMENT OF
PERFORMING AND CREATIVE ARTS

PRESENTS

AN ART AND MUSIC EXPOSITION

at the

18th Annual
CSI Undergraduate Conference
on Research, Scholarship,
and Performance

The Recital Hall, the Williamson Theatre,
the CSI Student Art Gallery, the Atrium, and
The Art Gallery of the College of Staten Island

Center for the Arts
Thursday, May 2, 2019

RECITAL HALL, 1P-120

CSI MUSIC RECITAL

11:30am – Noon

This program features students in CSI's Young Artists Program. Participating students in the Young Artists Program combine weekly private instruction with weekly performance workshops with instructing faculty professors and fellow students present. This morning students of Dr. Sylvia Kahan, Professor Elena Heimur, and Dr. David Keberle will be featured.

Prof. Michael Morreale, Program Coordinator for Music
Prof. William Bauer, Performance Coordinator

Program

Arabeske, Op. 18 .....Robert Schumann (1810-1856)
Lesly DeCastro, piano

Hark! The Ech'ing Air .....Henry Purcell (1659-1695)
Somewhere from West Side Story .....Leonard Bernstein (1918-1990)
Christina Squicciarini, soprano
Dr. Sylvia Kahan, piano

Weltschmerz, for digitally modified sounds and live soprano .....Maria Zakharycheva (b. 1997)
Maria Zakharycheva, soprano

Note by the composer:
Weltschmerz is an original composition consisting of modified pre-recorded audio, electronic sounds and live electronically augmented voice. The title, based on a German word that literally means "world-pain," was introduced and used by various Romantic-era authors. The word denotes a worldview as well as specific feelings and moods. It is described by Frederick C. Beiser as "a mood of weariness or sadness about life arising from the acute awareness of evil and suffering." This description resonates with my idea behind the composition, and me personally, due to the multifaceted meaning behind it. In my composition, I tried to impart that pessimistic mood of awareness of people's suffering, while throwing in a dash of (to quote Dr. David Keberle) "hallucinatory religious fervor."

THE ART GALLERY OF THE COLLEGE OF STATEN ISLAND, 1P-112

PLAYTHINGS AND PERFORMING OBJECTS

Noon – 4:30pm

Curator: Edward Miller and Valerie Tevere, Professors, Department of Media Culture

This exhibition explores how objects and images can be constituted to dramatize and resist our current political culture. It features works that revel in the theatricality of the art gallery itself and showcase how objects and images are themselves performative, inviting audiences to respond through action. The exhibit includes a video about a theater worker entitled *The Situation* by Camel Collective, the slide/sound projection *American Theatre* by Maryam Jafri that revisits repression in theater history, panoramas of our political reality painted onto cardboard by Zoe Beloff in *Parade of the Old New*, Thiago Szmrecsányi's light sculpture *Artivists* that re-imagines art and activism, and toy theaters created by Great Small Works' for their subversive puppet show *Terror as Usual*.

WILLIAMSON THEATRE 1P-111

PLENARY SESSION

1:00pm – 2:00pm

Performance section

This program features Graduating Senior Maria Zakharycheva in an excerpt from her Senior Recital, which was held on April 30. This was a culmination of Maria's study in CSI's Young Artists Program and her work with her teacher, Prof. Elena Heimur. Maria will be accompanied by Dr. Sylvia Kahan.

Wer hat dies Liedlein erdacht?
and
Das irdische Leben .....Gustav Mahler (1860-1911)

Maria Zakharycheva, soprano

Dr. Sylvia Kahan, piano

RECITAL HALL 1P-120

MUSIC HOUR RECITAL

3:00pm – 4:00pm

This program will feature the Jazz Arranging Students of Professor Michael Morreale who will present musical arrangements accompanied by members of the CSI Jazz Ensembles. All performers but one are students from the BS Concentration in Jazz Studies and performance. This afternoon will also feature the CSI Jazz Repertory Combo.

Program to include

Nature Boy .....Eden Ahbez, arranged by Ruber Simbana

There Is No Greater Love .....Isham Jones/Marty Symes, arranged by Johnathan Hernandez

Long Ago and Far Away .....Jerome Kern/Ira Gershwin, arranged by Christopher Gonzalez

Soulful Strut .....Eugene Record/Sonny Sanders, arranged by Christian Nathaniel

Fly Me to the Moon .....Bart Howard/Kaye Ballard, arranged by Sophia Sparnroft

Waltz 2 from Jazz Suite No. 2 .....Dmitri Shostakovich, arranged by Trevor Clark (Senior Project)

THE CSI JAZZ ENSEMBLE

Directed by Michael Morreale

Angelina D'Aquino – trumpet, Lesly DeCastro – trombone
Alfred DeRosa – piano, Christopher Ferdinand – tenor saxophone
Christopher Gonzalez – guitar, Johnathan Hernandez – guitar
Steven Krute – electric bass, Keith Lewis – drums, Matt Parenti – drums
Ari Parness – guitar, Ruber Simbana – drums, April Sinclair – alto saxophone
Terry Simon – drums, Sophia Sparnroft – double bass

CFA ATRIUM, THE GLASS CASE

METAL CASTING IN PEWTER

2:30pm – 4:30pm

Faculty advisor: Professor Marianne Weil, Associate Professor of Sculpture

Metal Casting-the Relic

reliquia 遺物；遺跡；遺風。 遗物；遗迹；遗风。 **Р е л и к в и я** דירש

Relic = derived from relinquere, Latin "to leave behind."

For this assignment, students in Advanced Sculpture/ART 350 were required to create a small contemporary relic of their own in pewter.

Each student designed and carved an early, yet sophisticated two-part mold in stone. In each stone mold, students then cast multiple pewter relics.

Pewter, a malleable metal alloy, has been in use for nearly 3,500 years. The earliest piece of pewter found is from an Egyptian tomb, 1,450 BCE. Traditionally composed of 85–99% tin, mixed with the addition of copper, antimony, or bismuth (and previously lead), the alloy becomes enduring and resilient.

Katherine Acevedo
Stephanie Cantor
Brianna Caraballo
Jian Wen Chen
Beyzanur Donmez
Natalie Leibovici
Long Jie Liu
Rachel Michaelov
Alisha Monsalvo
Samantha Tirado

Special Projects in Sculpture
Long Jie Liu
Alisha Monsalvo

CSI STUDENT ART GALLERY 1P-118B

UNDERGRADUATE RESEARCH CONFERENCE EXHIBITION

2:30 pm – 4:30 pm

Faculty advisor: Professor Miguel A. Aragón, Assistant Professor of Printmaking

The URC Exhibition is a student-curated group exhibition representing a wide range of talent from the CSI Art Program. This year's exhibition includes work in drawing, painting, sculpture, printmaking, and photography.

Curated by CSI Art and Photo majors: Jian Wen Chen, Julia Correale, and Joao Turbi

Leslie A. Abernethy
Katharine Acevedo
Taylor J. Blair
Sydney Bogath
Taylor Brennan
Anastassiya Bukayeva
Jian Wen Chen
Julia Correale
Jacqlyn Davis
Jesus Diaz
Briia Eldridge
Gabriella Iacono
Ava Lagana
Edmond Liang
Darlene Livingston
Madoka Nakamura
Jackson L. Neil
Isaiah Novelo
Danfeng Qiu
Arlene Ramos Martinez
Howard Ray
Margaret Rowan
Rebecca A. Seder
Doha Shehabeldin
Lindsay S. Sherman
Mirsada J. Simon
Chuyun Tseng
Joao Turbi
Mohammed Giash Uddin
Caitlin M. Vlahos
Benjamin W. Zarrelli
Kai Lun Zhang

ORAL/PAPER PRESENTATIONS

CENTER FOR THE ARTS
1P-109
11:15PM - 12:15PM

PAPER-01

The Entanglements of Personal and National History: An Immigrant Experience in a New World

Laura Grass
Faculty Mentor: Professor Lara Saguisagi | Department of English

In Thi Bui's graphic narrative The Best We Could Do, Bui illustrates the immigrant experience portraying how her family settles in America. Bui illustrates the immigrant experience and juxtaposes her family's multigenerational experiences in Vietnam and in America. As image is vital to the portrayal of this story, the combinations of words and pictures provided in the comics medium propels Bui's statement of her personal history layered with that of a national narrative.

I will supplement my reading of Bui's graphic narrative by comparing it to "Salt|Water" by Patricia Nguyen. "Salt|Water" is also an article about Vietnamese immigration and proposes the idea that while the immigration experiences can be unique personally, they may not entirely be unique on a broad spectrum. This additional source works in tandem to develop my thesis and focuses on furthering the understanding of immigration and how it effects not only the individual but the world around them as well. Immigration, especially given the current political climate, is a topic worth studying. Hopefully texts such as these will be interpreted as a call to action going forward.

PAPER-02

Ulysses: A Versatile Character

Maria Sciortino
Faculty Mentor: Professor Paola Ureni | Department of World Languages and Literatures

The focus of this paper will be to explore the polyhedric figure of Ulysses in the antiquity and medieval literature, initially portrayed by Homer and by prominent authors who have depicted his character and his story according to their own social, philosophical or religious context and beliefs. Homer paints Ulysses as a courageous man, able to defeat the Trojans thanks to his wits, and whose imperative love for his family and homeland bring him back to Ithaca. Homer, however, leaves his story suspended with the prophecy of Tiresias, which suggests one last voyage Ulysses must make. Dante reinterprets the character and his fate according to his Christian values, which will be a focal point on this paper. Primary sources such as The Odyssey, Canto XXVI of the Divine Comedy, The Aeneid along with secondary sources (Picone, Freccero, Hollander, Pihas, and Logan) will help smoothly establish how Ulysses' figure becomes a versatile one. From heroic strategist (Homer) to Fraudulent Counselor (Dante), Ulysses assumes different roles and images.

The question to be posed is: does it suffice to say that the social periods or contexts are the catalysts of Ulysses reinvented character? Alternatively, is each author underlining different aspects of the hero which do not exclude the other? Who is to say that Ulysses was an extraordinary man, or was an ordinary man? The paper will investigate the concept of curiositas in relation to Ulysses's thirst for knowledge, which brought him to explore beyond the pillars of Hercules, surpassing the limits set by God.

PAPER-03

Investigation of Tensile Properties of Bone Sample

Ines How-Choong
Faculty Mentor: Professor Jean-Philippe Berteau | Department of Physical Therapy

Bone is a biological material made of collagen fibrils and hydroxyapatite crystals. Mechanically, it is an anisotropic material - different mechanical properties depending on the direction of the pressure. However, most of the mechanical parameters obtained come from compression or indentation test. Recently, some research has shown the possibility to test the tensile properties of the bone at the nanoscale.The aim of this study is to investigate the tensile properties of bone samples at the nanoscale. To do so, we seek to develop a technique to obtain the Young modulus of bones with Atomic Force Microscopy (AFM). Our hypothesis is that we can glue the collagen fiber of bone on AMF tips and perform a tensile test. We will test fish bones and we seek to extend the fibrils of fish bones with an AFM tip until rupture. We expect to find an elastic modulus around 5 GPa.

[1] Experimental investigations into the mechanical properties of the collagen fibril-noncollageneous interface in antler bone

[2] Nano-mechanical properties of individual mineralized collagen fibrils from bone tissue

PAPER-04

Mineralization of a Self-Resorbable Polymer

Guillaume Courtemanche
Faculty Mentor: Professor Jean-Philippe Berteau | Department of Physical Therapy

The human bone is a complex and unique display of stiffness, toughness and strength. Due to its complex architecture and uncommon association of properties, making bone-implants has been a challenge for research in recent years. Bone implants and surgeries are becoming more and more problematic for the health industry because of the increase of bone diseases and need for second surgeries because of implants that do not have a long lifespan. The rationale of our project is to use human mesenchymal stem cells to mineralize a self-resorbable polymer into a bone-like material. Stem cells would act as “micromachines” to control the mineralization process. Based on previous research that we’ve made, we've identified pathways of mineralization to identify the proteins involved in the process. In this part of the project, we’re looking to mineralize the self-resorbable polymer we have at our disposal, the standard BiogelX. The mineralization process of hydroxyapatite is a complex physical, biological and chemical process. To achieve mineralization, proteins, calcium ions and inorganic phosphate are required. We plan to use the cell culture media to bring those two elements to the MSCs and use the proteins expressed by the cells to mineralize the standard BiogelX.

PAPER-05

Irony and Women's Storytelling in Nineteenth Century Fiction

Ashley Dirzis (Macaulay Honors College)
Faculty Mentor: Professor Simon Reader | Department of English

How can female authorship specifically be seen as a form of labor? To answer this question, my paper focuses on representations of storytelling by women in 19th Century Fiction. I argue that such storytelling labor is often presented in order to please a male audience. My examples come from Wuthering Heights by Emily Brontë, and Jane Eyre by Charlotte Brontë, paired with the historical context of the Victorian era. This presentation also considers the idea of women's writing as a unique form of labor, one that was not always seen as suitable for them, even by female writers themselves. Wuthering Heights has multiple narrators, and while the principle narrator is Mr. Lockwood, a visitor to the area, the majority of the novel is transmitted via Lockwood in the voice of Nelly Dean, a servant at the titular estate. Nelly Dean presents her story in such a way that Mr. Lockwood would be entertained and interested. Her story-telling abilities arguably exist solely for the enjoyment of Mr. Lockwood. Similarly, Jane Eyre, a first person novel told from the point of view of Jane Eyre, also a servant (in this case, a governess) indirectly suggests that the whole novel was written to please her now husband, who is blind and therefore cannot read. As Jane says, "Never did I weary of reading to him never did I weary of conducting him where he wished to go: of doing for him what he wished to be done," Brontë implies that Jane does not have the authorial freedom that she herself has. This paper will include readings of the novel and a consideration of historical sources. For example, in The Daughters of England: Their Position in Society, Character and Responsibilities (1842), Sarah Stickney Ellis argues "literature is not the natural channel for a woman's feelings," while at the same time having published multiple books. Ultimately, this paper will investigate the irony that the Brontë sisters and Sarah Stickney Ellis deem it unsuitable for women to be writers, even as they make a living as writers themselves.

PAPER-06

Seeking Catharsis and Mental Health Through Creative Writing

Todd Lima (The Verrazano School)
Faculty Mentor: Professor Halil Ege Ozen | Department of Political Science and Global Affairs

Depression, stress, and anxiety are the silent killers of our society, but as we have advanced so have our methods of dealing with these ailments. Therapy and drugs, among other practices, have been proven to help, but unfortunately are either not available to everyone in need, or not ideal methods for certain parties. In our advancement, we may have overlooked a cheap and simple technique that can help those in need. This paper aims to prove the mental benefits that come from creative writing and how it could be used, either in tandem or instead of, traditional methods of mental help. Not only showing that it is obviously cheaper and more simple, but analyzing and comparing past research projects that took multiple groups struggling with their mental health (Vietnam veterans with PTSD, new mothers with Postpartum depression, etc.) this paper will compare how the subjects felt before and after writing creatively, as well as examining how other forms of writing affected them.

POSTER PRESENTATIONS

CENTER FOR THE ARTS
ATRIUM
2:00PM - 4:00PM

Poster Location by Department

Accounting and Finance ...2nd Floor–Walkway *(Williamson wall)*
Biology .....1st Floor–Back
Chemistry.....1st Floor–Front *(Williamson wall)*
Computer Science .....1st Floor–Front *(Williamson wall)*
Curriculum and Instruction .....2nd Floor–Walkway
Engineering Science and Physics..1st Floor–Front *(Springer wall)*
English .....2nd Floor–Walkway
English/Linguistics .....2nd Floor–Walkway
History .....2nd Floor–East Lounge
Management .....2nd Floor–Walkway *(Williamson wall)*
Marketing .....2nd Floor–Walkway *(Williamson wall)*
Media Culture .....2nd Floor–Walkway
Nursing .....2nd Floor–West Lounge
Physical Therapy .....2nd Floor–West Lounge
Physics & Astronomy.....2nd Floor–West Lounge
Political Science and Global Affairs .....2nd Floor–East Lounge
Psychology .....1st Floor–Center
Social Work .....2nd Floor–West Lounge
World Languages & Literatures .....2nd Floor–Walkway

ACCOUNTING AND FINANCE

CONFERENCE LOCATION:
2ND FLOOR–WALKWAY (WILLIAMSON WALL)

POSTER: ACC/FNC-01

Big Data Analytics Tackle Tax Evasion

Erica Brogna (The Verrazano School)
Faculty Mentor: Professor Cynthia Scarinci | Department of Accounting and Finance

Big Data is the term applied to datasets that exceed the boundaries of traditional database software. To further, Big Data Analytics is the ever-changing, cost effective technological tools being applied to companies in order to enhance the detection of tax evasion and taxpayer identity theft for auditors. Auditors function under the Internal Revenue Service (IRS), who investigate financial crimes associated with tax evasion. Tax authorities are encountering the obstacle of dealing with tax evading employees in business on a larger scale.

Unfortunately, investigators are equipped with obsolete auditing strategies, which have become ineffective and time consuming. In order to detect advanced fraudulent issues, the IRS has begun to use Statistical Analysis System (SAS) software and Microsoft Excel.

When Big Data is combined with the high-powered analytics of SAS and Microsoft Excel, it becomes possible to detect tax evasion, minimize the risk of fraud, and target the potential risk of fraud.

POSTER: ACC/FNC-02

Quantitative Easing as a Monetary Policy: Evaluation

Rabana Arif (The Verrazano School)
Faculty Mentor: Professor Hyoung-Suk Shim | Department of Accounting and Finance

Quantitative Easing, a massive expansionary monetary policy, was initiated in response to a sharp increase in the unemployment rate due to the subprime mortgage crisis in 2008. The crisis led to a radical reorganization of the investment banking industry with the failure of the nation's two major investment banks: Lehman Brothers and Bear Stearns, leaving many individuals unemployed. The recession lasted from December 2007 to June of 2009, beginning with the bursting of the housing bubble and quickly spreading to the United States financial sector. It greatly impacted the investment banks, mortgage lenders, insurance companies, commercial banks and numerous companies that heavily relied on credit. The overall result was a widespread slowdown of growth in the United States economy with an incredibly high unemployment rate.

The purpose of this paper is to examine the impact of QE on the United States Financial Market, and to evaluate its effectiveness as a business cycle stabilization policy. Furthermore, the purpose of this project is to examine the effectiveness of QE by analyzing the U.S. monthly unemployment rate and related statistics of the U.S. banking sector, and to identify the specific actions that were taken by the Federal Reserve to address the issue. Mainly focusing on QE, the unconventional monetary policy initiated by the Fed to decrease the unemployment rate and bring the economy back on track. Since a high unemployment rate is one of the widely recognized indicators of a recession, it is important to examine how any of the monetary policies initiated by the Fed impact it. Throughout the years of recession many policies are initiated to stimulate economy. QE is one of the policies instituted by the Fed in which the Fed decides to purchase the assets. It involves increasing the prices of mortgage-based assets and treasury bonds to stimulate employment and output. Individuals who are unemployed and lack assets are not directly affected by any changes in the prices. The unemployed are however dependent on policies that help generate income. The reason to examine the recession of 2007-2009 is meaningful for the purpose of preparing for the next recession that can take place in the future, and prevent the sharp increase in the unemployment rate.

BIOLOGY

CONFERENCE LOCATION:
1ST FLOOR–BACK

POSTER: BIO-01

Neurodevelopmental Defects Associated with Gestational Exposure to Low Levels of Dibutyl Pthalate

Ommiya Butt (CUNY Research Scholars Program) | **Begzodjon Musaev** (CUNY Research Scholars Program)
Faculty Mentor: Professor Abdeslem El Idrissi | Department of Biology

The etiology of autism is thought to involve the complex interplay among genetic and environmental factors. Several environmental risk factors induce epigenetic changes in DNA, including those in autism-associated genes (AAG). Dibutyl Pthalate (DBP) is a developmental and reproductive toxin that causes a broad range of birth defects resulting in neurological impairments. Our preliminary data suggest that gestational exposure to low doses of DBP causes gender-specific neurobehavioral abnormalities in the offspring consistent with the autism spectrum disorder. These neurobehavioral characterizations with DBP exposure are consistent with altered inhibitory (GABA) functioning in the brain. We hypothesize that gestational exposure to DBP alters maturation of the inhibitory system which leads to a developmental delay observed in these mice. Interestingly, when we used the fragile x mouse model (Fmr1 ko), we found that all DBP-induced phenotypes were reproducible and exaggerated. Since Fmr1 ko mice have diminished GABAergic function, show abnormal expression of many genes implicated in the etiology of autism, and show many of DBP-induced behaviors (e.g heightened anxiety) this further confirms the strong link between the genetic makeup and the susceptibility to environmental risk factors.

We propose to study the effects of DBP on epigenetic modifications of the DNA, gene expression, endocrine alterations and GABAergic maturation in the developing mouse brain. We will first determine the expression level of epigenetic chromatin remodeling factors that are known to control gene expression by changing the chromatin structure and accessibility. Second, we will examine the expression levels and epigenetic changes of AAG. Third, we will map the temporal expression of GABAergic markers and key proteins in the steroidogenic pathway of the brain and finally we will examine the neurobehavioral alterations. These will be measured after gestational exposure to DBP of control and Fmr1 ko mice. We believe that the approach we are using will allow us to obtain answers that are critically relevant to understanding the involvement of environmental risk factors and the genetic predisposition in the etiology of autism.

POSTER: BIO-02

Expression of Glucose Transporter, Insulin Receptor and their Role in Bioenergetics

Tehany Twaiti | Girolama Gambino | Ariel Rivera
Faculty Mentor: Professor Abdeslem El Idrissi | Department of Biology

We have shown that taurine supplementation increased islets size in the pancreas and insulin production by ß cells. These changes in pancreatic function are responsible for the increased resistance to glucose challenges in taurine-fed mice. Control mice showed a significant increase in plasma glucose concentration 30 min after glucose injection with a gradual decrease thereafter. By 120 min, mice were slightly hypoglycemic relative to baseline. In contrast, taurine-fed mice showed a drastically different response to glucose injection. There was a delayed peak of plasma glucose at 60 min post injection and the plasma glucose in these mice was significantly lower than controls at all times measured ($p < 0.001$). These data were reproduced in avian. Insulin is primarily a metabolic hormone functioning on muscle, fat and liver via activation of IR receptor. Insulin also functions on other non-metabolic tissues such as the brain. Once insulin is secreted it crosses the blood-brain barrier by a transporter-mediated saturable mechanism. The IR is widely expressed in the brain at various levels. This regional specificity implicates insulin, through activation of its receptor, in various brain function that are mediated by these brain structures. In this study, we propose to examine the

levels of insulin receptors (IR) expression in the pancreas and brain in controls and taurine-fed mice. In mice, we found a significant increase in IR expression in all brain regions and pancreas compared to controls. Here, we propose to investigate the expression pattern of IR and how it is affected by taurine in the brain. Interestingly, changes in the expression levels of insulin receptors were associated with changes in the expression levels of glucose transporter (Glut4) in neurons. We suggest that circulating levels of insulin regulate the expression levels of insulin receptors in the brain that in turn regulate neuronal bioenergetics through regulation of the expression of Glut4.

POSTER: BIO-03

Neuroactive Steroids and Seizure Susceptibility

Malika Makhsudova | Mohammad Bokhari
Faculty Mentors: Professors Abdeslem El Idrissi and Leonard Ciaccio | Department of Biology

There is increasing clinical and experimental evidence that hormones, in particular sex steroid hormones, influence neuronal excitability and other brain functions. The term 'neuroactive steroids' has been coined for steroids that interact with neurotransmitter receptors. One of the best characterized actions of neuroactive steroids is the allosteric modulation of GABAA-receptor function via binding to a putative steroid-binding site. Since neuroactive steroids may interact with a variety of other membrane receptors, excitatory as well as inhibitory, they may have an impact on the excitability of specific brain regions. Neuronal excitability is enhanced by estrogen, whereas progesterone and its metabolites exert anticonvulsant effects. Testosterone and corticosteroids have less consistent effects on seizure susceptibility. Apart from these particular properties, neuroactive steroids may regulate gene expression via progesterone receptors. Based on their molecular properties, these compounds appear to have a promising therapeutical profile for the treatment of different neuropsychiatric diseases including epilepsy. This review focuses on the effects of neuroactive steroids on neuronal excitability and their putative impact on the physiology of epileptic disorders.

POSTER: BIO-04

Synaptic Connectivity in Fragile X Syndrome

Andrii Mamchyn | Christopher Boromee | Ellaesea Domingo
Faculty Mentor: Professor Abdeslem El Idrissi | Department of Biology

Fragile X Syndrome is the most common known genetic cause of autism. Fmr1-KO mouse, lacks the Fragile X Mental Retardation Protein (FMRP), and is used as a model of the syndrome. The core behavioral deficits of autism may be conceptualized either as excessive adherence to patterns as seen in repetitive actions and aberrant language, or as insensitivity to subtle but socially important changes in patterns. The hippocampus receives information from the entorhinal cortex and plays a crucial role in the processing of patterned information. The function of the hippocampus is pattern completion from entering separated information, forming episodic memories. In this study, we used paired-pulse stimulation of the afferent perforant path and recorded from the CA3 region of the hippocampus. This stimulation paradigm allowed us to examine the processing capabilities of the dendate gyrus as a function of increasing interstimulus interval (ISI) and how taurine, a GABAA receptor agonist affects such information processing. We found that WT slices showed pair-pulse facilitation at ISI of 50-300 ms whereas the Fmr1-KO slices showed a consistent pair-pulse depression at a comparable ISI. Addition of 10 μM taurine to the WT slices resulted in a drastic decrease of the peak response to the second stimulus, resulting in an initial depression at 50 ms ISI followed by potentiation at higher ISI (100 ms and above). In the presence of taurine, the amplitude of the second response remained significantly lower than in its absence. Fmr1-KO mice however, were completely insensitive to taurine application and pair-pulse stimulation always resulted in a depression of the response. Previously we reported that Fmr1-KO mice have reduced GABAA receptors as determined by both

immunohistochemistry and western blotting using an antibody that recognizes the beta subunits of the receptor. We also showed that taurine binds to these subunits. Therefore, the insensitivity of Fmr1-KO slices to taurine application could be due to the reduced binding site expressed by the GABAA receptors in these mice.

POSTER: BIO-05

Prion-like Behavior of Pathological Human Tau

Krystle D. Chapple (The Verrazano School)
Faculty Mentor: Professor Alejandra Alonso | Department of Biology

One prominent theory for the cause of Alzheimer's disease states that Tau, not beta-amyloid, is the etiological agent for Alzheimer's pathogenesis. An important factor in the progression of this disease is the interaction between pathogenic human tau and normally functioning tau. Currently, little research regarding this interaction exists. For this experiment, we will be observing various combinations of five different variations of the tau protein. To do this we will transfect HEK cells with two different mutations of tau protein. Each variant will have a different fluorescent tag that will allow us to differentiate between the two different tau proteins within the cell. Based on previous research, we hypothesize that the normal tau proteins will be converted to pathogenic tau. Through these observations we hope to gain more insight into how different forms of tau interact and apply this knowledge to future Alzheimer's research.

POSTER: BIO-06

The Effects of Abnormal Tau on Neonatal Behavioral and Motor Development

Estephany Picazo (Macaulay Honors College)
Faculty Mentor: Professor Alejandra Alonso | Department of Biology

The hyperphosphorylated tau protein is known to be associated with several neurodegenerative diseases, such as Alzheimer's disease. An inducible pseudophosphorylated tau (Pathological Human Tau, PH-Tau) mouse model was able to demonstrate that abnormal tau induces cognitive impairment. This study looked at the effect of the PH-Tau transgenic mouse model on neonatal behavioral and motor development. From postnatal day 3 to 25, mice pups partook in a series of age appropriate assessments. It was found that for certain assessments PH-Tau mice showed results significantly below the standard markers set by the control group. This effect also occurred for certain assessments in mice with low levels of PH-Tau, in which the PH-Tau protein was not induced. These findings suggest that abnormal tau effects certain aspects of neonatal neurobehavioral development.

POSTER: BIO-07

Mouse Model of Tau Induced Neurodegeneration

Abdonnie Holder (CUNY Research Scholars Program)
Faculty Mentor: Professor Alejandra Alonso | Department of Biology

Alzheimer's is the most common form of dementia that causes a rapid decline in memory and functional processes in a person's everyday activities. This cognitive decline is due to the aggregation of an abnormal phosphorylated form of tau which has been shown to increase the neurotoxicity in the cell and animal molecules. It is still unclear as to how abnormal tau is triggered, yet it is used as a diagnostic marker and a target for therapy in preventing Alzheimer's disease. Thus we hypothesized that the system for synthesizing tau and controlling its normal conformation is not functioning correctly. As a result a mouse model was generated to determine as to why abnormal tau protein is not being degraded and why and how this causes synaptic, autophagic and neurological disorders. We proposed to study proteins involved in the autophagy system and found that the expression of abnormal tau induces a decrease of Beclin and LC3A/B with the use of western blots. To use our animal models we needed to study how to keep a healthy and productive yet efficient animal colony.

POSTER: BIO-08

The Effect of Hyperphosphorylated Tau on Insulin Receptor Density and Glucose Transporter

Izabella Beniaminova (The Verrazano School, CUNY Research Scholars Program)
Faculty Mentor: Professor Alejandra Alonso | Department of Biology

Alzheimer's disease (AD) is dementia characterized by the presence of hyperphosphorylated tau. Tau is a microtubule-associated protein, which interacts with tubulin and promotes stabilization of microtubules consequently enabling successful neuronal transmission. In the case of AD hyperphosphorylated tau, pathological tau disrupts microtubule assembly and prevents neuronal synapsis. To better understand the mechanisms of pathological tau acting as a culprit of AD, our lab has generated a new inducible mouse model of neurodegeneration that expresses pathological human tau (PH-tau) with pseudophosphorylation at Ser199, Ser262, Thr212, and Thr231. The unique model allows us to derive to groups of mice expressing 4% of the endogenous tau (PH-tau Low) and 14% (PH-tau High) respectively.

Over the years of studying AD, scientists started noticing similar pathologies being present in patients with neurodegenerative disease and diabetes. The idea that both diseases can be interlinked sparked our interest and inspired us to observe changes in the density of insulin receptors and glucose transporter (GLUT4) in the presence of hyperphosphorylated tau protein. Consequently, performing immunohistochemistry and electron microscopy should help us see any changes taking place in the pathological brain. We found that the expression of PH-tau changes the levels of insulin receptor and glucose transporter in the hippocampus neurons of our mouse model.

POSTER: BIO-09

The Impact of Abnormal Tau Protein in the Distribution of GABA, Muscarinic amd

Hrisula Dervishi
Faculty Mentor: Professor Alejandra Alonso | Department of Biology

Alzheimer's disease is a progressive disorder that causes brain cells to degenerate and eventually die. It is the most common cause of dementia which is a continuous decline in thinking, behavioral and social skills that disrupts a person's ability to function independently.

At first, Alzheimer's disease typically destroys neurons and their connections in parts of the brain involved in memory, including the entorhinal cortex and hippocampus. It later affects areas in the cerebral cortex responsible for language, reasoning, and social behavior.

This project will be focused on the study of the effect of the conformationally modified tau on an inducible pseudophosphorylated tau (Pathological Human Tau,PH-Tau) mouse model. Human tau has been implicated in the pathogenesis of several neurodegenerative diseases, including Alzheimer's disease (AD). For this project we'll focus on the impact of abnormal tau protein in the distribution of GABA, Muscarinic, Glutamate and other receptors in the mouse's brain. This project may give us a better understanding of the neurodegeneration in the level of receptor distribution.

The methods used for this experiment will include genotyping. Genotyping will help us determine which mice are the carriers of the disease and which ones are not.

We have found that PH-Tau binds to muscarinic receptors M1 and M3. The results obtained from this research will lead us into other research fields, for ex. how we can keep the receptor's distribution in normal parameters, etc.

POSTER: BIO-10

Behavioral Change in Tau Transgenic Mouse Model of Alzheimer Disease Fed with Taurine

Yasmine Mechalikh
Faculty Mentor: Professor Alejandra Alonso | Department of Biology

Recent studies have suggested that diet and lifestyle factors may represent protective strategies to minimize the risk of developing Alzheimer disease. Taurine is an amino acid found in the brain that is rich in antioxidant and helps in the assembly of microtubules that are disturbed as a consequence of the presence of hyperphosphorylated tau. The purpose of the current study is to investigate whether dietary supplementation with taurine could reduce cognitive and behavioral deficits in a transgenic mouse model for Alzheimer disease. Tests and analysis such as the novel object recognition test are being used to observe the behavior and the assessed memory in taurine supplemented groups compared to mice without the diet supplement. We observed very significant differences in the behavior of control animals compared to tau transgenic animals. This presentation will demonstrate the effect of taurine supplementation to the diet.

POSTER: BIO-11

Probiotic Bacteria's Role in Breaking Down Alcohol

Michael Adejokun | Haaziq Jawed
Faculty Mentor: Professor Chang-Hui Shen | Department of Biology

Probiotic-containing yogurts normally have therapeutic properties. These probiotics encourage the host health, and its immune system which in response retains the ability to control inflammation. For example, Steptococcus thermophilus has been proven to be beneficial to maintain remission of ulcerative colitis, and stop Crohn's disease from reoccurring postoperative. It can produce high levels of vitamin B-9 which plays a major role in iron metabolism, homeostasis of cardiovascular function, and more importantly controlling fetal development in the uterus. It has also been shown that Lactobacillus bulgaricus and Steptococcus thermophilus with a symbiotic relationship in yogurt have the ability of preventing key oral pathogens such as S. mutans as well as A. Actinomycetemcomitans from flourishing. Furthermore, gastroduodenal diseases were majority lower in the rural area than the town where 46 of 151 blood donors indicated peptic ulcer disease in the town, and 10 of 156 in the rural area. In addition, 100 of 151 indicated gastroduodenal diseases in the town where 58 of 156 were reported in the Balkan area. A plausible explanation could be that Lactobacillus bulgaricus in traditional yogurt could have relieved bacterial cell load in the stomach that ultimately lowered gastric inflammation, and diseases related to the gastric. Although probiotics are beneficial to human gut and intestinal health and both locations are also important for the alcohol oxidation, it has never been studied that the beneficial effect of probiotics in degrading alcohol. Here, we use two probiotic bacteria Steptococcus thermophilus and Lactobacillus bulgaricus to identify how the cells respond to ethanol. This will be observed by doing several growth experiments in different ethanol concentrations to see how the different cells react in the presence of ethanol. Findings will provide valuable information in engineering cells that can resist high concentrations of ethanol.

POSTER: BIO-12

Resistance of Pseudomonas Strains to the Presence of TNT and DNT

Veronica Valdivieso | Frida Fatia | George Kaluski | Omer Yetiskul
Faculty Mentor: Professor Chang-Hui Shen | Department of Biology

2,4,6-Trinitrotoluene (TNT) and 2,4-Dinitrotoulene (DNT) are chemical compounds used as explosive material to create military shells, bombs and grenades. The residues of these explosives are now found in many third world countries and create a hazardous environment for humanity. Detection of TNT and DNT in soil and water, has been an area of interest for many scientists and also our military. The overall research goal is to create a biosensor that detects explosive residues using soil bacteria. Our research goal is to understand how bacterial cells respond to TNT and DNT in order to genetically engineer those cells into biosensors that are capable of detecting these compounds. Here, three Pseudomonas strains, Pseudomonas Putida, Pseudomonas Aeruginosa and Pseudomonas Fluorescens, are used to investigate the growth and viability of these strains with a variety of TNT and DNT concentrations. The growth and the viability assay were analyzed to find the most resistant strain. Based on the current data Pseudomonas Aeruginosa is the most resistant strain to TNT and Pseudomonas Fluorescens is the most resistant strain to DNT. Pseudomonas Putida growth was more inhibited to both of the compounds. These observations provide good information for future biosensor host strains selection.

POSTER: BIO-13

Ubiquitination of Clustered Protocadherins Occurs within the Variable Cytoplasmic Domain and is Associated with Intracellular Trafficking

Stacy Shapiro (Macaulay Honors College)
Faculty Mentor: Professor Greg Phillips | Department of Biology

Clustered protocadherins (Pcdhs) are a family of "neural barcoding" molecules encoded by a large gene cluster in vertebrates. These proteins mediate interactions between axons, dendrites and glial cells during neural development. A large number of "variable" exons, each coding for a different extracellular, transmembrane, and partial cytoplasmic domain, can be spliced to a "constant" domain that encodes a common cytoplasmic moiety. Pcdhs appear to have differential activity depending on cell type. On one hand, they were shown to promote interactions between dendrites and astrocytes in the cortex, while on the other hand, Pcdhs mediate avoidance of same cell dendrites in starburst amacrine cells of the retina. It remains to be determined how adhesive like molecules can promote avoidance of interacting membranes but cytoplasmic interactions are likely to be important for how Pcdhs affect interacting cells. Our previous studies have shown that native and transfected Pcdhs have a relatively abundant distribution within endosomal compartments and this trafficking was mediated by the variable portion of the cytoplasmic domain (VCD). Here we show for one Pcdh (Pcdh gamma A3) that trafficking to Rab7 positive endosomes could be mimicked by a segment of the molecule consisting of the transmembrane domain and VCD (termed the VCDstub). Western blots of immunoprecipitates revealed that the VCD stub is extensively ubiquitinated. Truncation of C-terminal half of the VCD stub significantly reduced trafficking to Rab7 positive endosomes and this was accompanied by loss of ubiquitination. Further fine mapping identified an amino acid segment required for ubiquitination. This segment was shown previously to be important for Pcdh trafficking in endosomes. Similar levels of ubiquitination were observed for other Pcdh stubs as well as for full length Pcdhs. Overall the results suggest that ubiquitination may be an important factor in Pcdh trafficking and function.

POSTER: BIO-14

Gamma-Protocadherin Localization at the Synapse Corresponds to Parameters of Synaptic Maturation

Hanna Sverdlov (Macaulay Honors College)
Faculty Mentor: Professor Greg Phillips | Department of Biology

Clustered protocadherins (Pcdhs) are a family of ~60 cadherin-like proteins (divided in to subclasses alpha, beta and gamma) that are thought to comprise a surface "barcode" in individual neurons. The code is generated through combinatorial expression via epigenetic regulation at a large gene cluster. During early neural development, Pcdhs mediate dendrite self-avoidance in some neuronal types through a still uncharacterized anti-adhesive mechanism. The Pcdhs have also been postulated to participate in synaptogenesis. Some synaptic defects were noted in knockout animals including synaptic number and physiology but the role of these molecules in synaptic development is not well understood. We have shown previously that Pcdh-gammas are highly enriched in intracellular compartments in dendrites and spines with less frequent localization at the synaptic membrane. We performed serial section immuno-electron microscopy in intact hippocampal CA1 as well as confocal microscopy on hippocampal neurons to examine the relationship of Pcdh-gamma localization to parameters of synaptic maturation including synaptic size and perforation status. We found that Pcdh-gammas were highly enriched in dendritic shafts mostly within ER-like and mitochondrial associated membranes. Pcdh-gammas were also located within vesicles in spine and presynaptic compartments as well as at some synaptic clefts. Synapses immunopositive for Pcdh-gammas were found to be larger in diameter with more frequent perforations. Similar findings were observed in cultured hippocampal

neurons immunolabeled for Pcdh-gammas together with pre- and postsynaptic markers. Analysis of spines in cultured neurons revealed that mushroom spines were more frequently immunopositive for Pcdh-gammas at their tips than thin spines. Taken together, these results suggest that Pcdh-gamma function at the synapse may be related to synaptic maturation and stabilization.

POSTER: BIO-15

Incidence and Implications: A Quantitative Evaluation of the Prevalence of Injuries/Conditions in Physical Therapy Patients

Amanda Davis
Faculty Mentor: Professor Leonard Ciaccio | Department of Biology

The objective of this study was to evaluate the prevalence of injuries/conditions within the population of new patients at an outpatient physical therapy clinic over a four-month period. The perspective for this research was derived from my personal experience as a volunteer in several Physical Therapy settings as well as my career as a dance instructor. As a student in the CUNY BA program, it has been possible for me to integrate these two activities in ways that have suggested new insights.

In this study, data were collected over a period of four months in order to determine which injury/condition had the highest incidence rate within a sample of 101 patients. Patients were eligible for inclusion if they held the status of new patient in the chosen four-month time period. Monthly visits to the clinic were made in which a computer was provided for collection purposes. Access was granted to patient charts with respect to proper HIPAA rules and guidelines. For each patient, the following information was obtained: initials, age, sex, region of injury, diagnosis, and past surgeries.

With 22% of participants presenting with injuries/conditions of the lumbar region, this region proved to be the most commonly effected in the study group. The most frequent lumbar injury/condition observed was lumbar radiculopathy. Of the 23 patients noted to have lumbar injuries/conditions, 35% were diagnosed with this condition. The ages of patients with this condition ranged from 52 to 74 with 25% of these patients being female and 75% being male. Lumbar sprains were seen frequently in patients as well. 30% of patients with lumbar injuries/conditions were noted to have lumbar sprains. Patients presenting with this injury ranged from age 15 to 62. Of these patients, 29% were female and 71% were male.

The data collected in this study suggests that males between the ages of 45 and 65 in this study group most frequently suffered from injuries/conditions of the lumbar region. These data can be investigated further for insight into injury prevention and post-injury rehabilitation. One of the long-term intentions for my research is the design of age, sex, and interest specific preventative strategies and recovery strategies.

POSTER: BIO-16

How a Bacteria and a Lack of Genetic Information in a Brain Cell Can Cause Alzheimer's

Clayton Shaw (CUNY Research Scholars Program)
Faculty Mentor: Professor Leonard Ciaccio | Department of Biology

I have developed a hypothesis that this disease is caused by genetics and a foreign invader in the brain. I don't think that a bacterium alone can cause Alzheimer's because bacteria can regularly be found in the brains of children and young adults. However, there has never been a child with Alzheimer's. This suggests that this disease must also be related to age. Tau is a protein that is abundant in brain cells. When the Tau becomes tangled it causes problems. But how does it get tangled? The answer is hyper-phosphorylation. Tau proteins are amino acids located linearly as a Tau string. A mutation causes one of these units to be missing. Now because this space is empty a phosphate molecule can now be placed there. In this research I want to determine the source of the phosphate molecule. I believe this irregularity can be caused by a bacterium inside of the brain that creates an enzyme that can enter the cell and results in the tangled form of the Tau protein. The way I can ultimately verify my hypothesis is to use the method of immunohistochemistry. If I had a box of red marbles and I wanted to find a specific marble that was the same color as the rest, obviously it would be very difficult to pick it out. But if I were to give this marble a special tag, say we paint this one marble blue, then finding it wouldn't be very hard at all. This is the concept to grasp. If I take this enzyme and titrate it, then using immunohistochemistry, I can use a specific dye to follow the path of this enzyme and expose it to a tissue culture of mice brain cells. Two tests must be done in separate trials of cells that are taken from mice that are young and that are old. Based on the results, if any change does occur at all I can use this to either verify or reject my hypothesis. However, before a single step of this latter part of my research can begin, I must first determine exactly what bacteria I want to focus on and the exact enzyme that I want to use in this research.

POSTER: BIO-17

Why is my Reproductive not being Productive?

Nana Samake (CUNY Research Scholars Program)
Faculty Mentor: Professor Leonard Ciaccio | Department of Biology

Malnutrition takes many forms and expresses itself in various forms in countries. It has been determined that many factors contribute to infertility such as; radiation exposure, age, infections, social pressures and many more. Infertility is a condition of the reproductive system in both males and females, that prevents conception of children. Fertility is more than just the ability to get pregnant. It's the ability to produce offspring that are healthy. Infertility is a devastating product of malnutrition. Clearly, starvation is a significant reality in impoverished nations. At the same time, even when an abundance of food exists in communities more fortunate, the privilege to eat doesn't necessarily mean they are immune to the problem of infertility. An environment where people with no access to clean water, is a place full of malnourished people. A place where people with no access to fruits and vegetables, is a place full of malnourished people. The underserved communities are those that suffer from this social conditioning. This condition is prevalent in parts of the world that are currently being plagued with diseases of the mind, body, and spirit. However, for this study, malnutrition as an inhibitor to infertility is defined more broadly to include the impact of nutrition on the viability of the offspring. Malnutrition during gestation directly affects the phenomenon of fertility. Research would be done to develop a deeper understanding of how malnutrition affects fertility.

POSTER: BIO-18

The Impact of Fluctuations in Climate and Resource Availability on Seabird Abundance

Maria Guarino (Macaulay Honors College)
Faculty Mentor: Professor Lisa Manne | Department of Biology

Seabird abundance in a given year depends on summer and winter distribution patterns, fluctuating oceanic climate, survival, fecundity, and resource availability. Data was collected for fourteen seabird species selected from North America, grouped by resource preference. A Poisson regression using the generalized linear model was performed to assess whether correlation exists between seabird population size and two variables, resource availability and oceanic climate. Every species demonstrated a nonrandom association with both variables, either positive or negative. Sandlance specialists often possessed a positive association for offshore or inshore sand lance, while generalists showed more variable results. Climate as represented by the North Atlantic Oscillation is a sufficient predictor of seabird population numbers because of consistent trends in breeding times. Resource availability may be a better predictor when there are spontaneous deviations from those typical climate trends.

POSTER: BIO-19

Assessing Public Reaction to Science in the News

Kelly Theodorakis (Macaulay Honors College)
Faculty Mentor: Professor Lisa Manne | Department of Biology

Social media is an integral part of how information is portrayed on a mass scale. “Fake news” is a phenomenon discovered recently that involves misinformation of ideas and stories in news outlets. This idea was previously used in reference to misinformation to the voting public in the 2016 election cycle but as a concept can be applied to other aspects of the news as well. We questioned whether this idea of fake news applies to scientific topics and how science news is represented and perceived. Data was compiled on stories published by the NY Times in January and February of 2018, then in November of 2018, using information from Facebook such as likes, comments, and shares that provide information on the level of interest towards the articles chosen from the NY Times. These articles were evaluated using methods of meta-analysis to determine if the main messages of the accompanied peer-reviewed articles are accurately portrayed in relation to the newspaper articles, if there is any political slant imparted in the article, and if the nuance of the original peer reviewed article is communicated at the appropriate level of complexity.

POSTER: BIO-20

Understanding Cytokine Expression in Glioblastoma Multiforme

Alicia Defonte (The Verrazano School)
Faculty Mentor: Professor Nancy Liu-Sullivan | Department of Biology

The purpose of this study is to identify how different kinds of cytokines affect Glioblastoma multiforme (GBM). GBM is a fast-growing tumor that develops from glial cells called astrocytes which are located in the brain. Glial cells are cells that support and insulate neurons. Cytokines are like signaling proteins, they are released by cells in order to interact with other cells of the immune system. They are very important in our immune systems because they are like the bosses, they can send signals to cells for example macrophages in order to help the body when it is under attack. There are pro-inflammatory cytokines and anti-inflammatory cytokines, these two types of cytokines are very different. Pro-inflammatory cytokines make a disease worse, while anti-inflammatory cytokines aid in inflammation and promote healing. The specific types of pro-inflammatory cytokines

we will be looking at are IL-1, IL-2, IL-6, IL-12, IL-17, and TNFa. The specific types of anti-inflammatory cytokines are IL-10, and TGFB. IL stands for interleukin, which are a type of messenger molecules that can stimulate immune responses. TNFa stands for tumor necrosis factor alpha, while TGFB stands for transforming growth factor beta. The methods we use for this research study are based in computational biology. To be more specific, differential expression levels of pro and anti-inflammatory cytokines will be explored more by using a database called Oncomine. This database contains a large amount of cancer-associated genes for different types of cancers, deposited by research groups around the world. By looking at different types of published research about cytokines we can see how to come up with an effective treatment. This research study is significant because finding different kinds of patterns of gene expression can provide awareness to identity an effective treatment. To design a plan for glioblastoma would improve the lives of those living with this disease.

POSTER: BIO-21

Oncomine Gene Expression Analysis of PI3K cancer signaling pathway in Glioblastoma Multiforme and the ELISA Experiments with Glioblastoma Multiforme

Arouje Shaikh (The Verrazano School, CUNY Research Scholars Program) **| Yenni Ortega | Adam Moreira | Sathis Niranchchan** (CUNY Research Scholars Program) **| Deneisha Campbell** (CUNY Research Scholars Program)
Faculty Mentor: Professor Nancy Liu-Sullivan | Department of Biology

Glioblastoma Multiforme (GBM) is the most aggressive type of glioma of the central nervous system (CNS) that can be found in the brain or the spinal cord. GBM represents 14.9% of all primary brain tumors, and 55.4% of all gliomas. GBM has the highest number of cases of all malignant tumors, this tumor represents about 15.4% of all primary brain tumors and about 60-75% of all astrocytomas. These tumors increase in frequency with age and affect more men than women. Adults with more aggressive glioblastoma have a median survival of about 14.6 months and two-year survival of 30%. Our project shall focus on a key cancer signaling pathway called PI3K. Specifically, we will select important gene components of PI3K signaling, collect gene expression data for each gene from the cancer data base called Oncomine. Gene expression patterns shall also be compared to DNA copy number data. The findings shall help shed additional light on how PI3K signaling contributes to GBM with the potential of identifying effective therapeutic strategies.

POSTER: BIO-22

Microplastic Effects on Feeding Rates of Artemia salina

Corey Zhong
Faculty Mentor: Professor William Wallace | Department of Biology

Water pollution is a prevalent phenomenon that occurs around the world. Everyday, roughly 8 million pieces of plastic pollution find their way into our oceans which can cause detrimental effects. Plastic, a non-biodegradable substance, has been proven to be lethal if ingested by sea turtles. Studies have shown that even just a few pieces of plastic can cause inimical effects on our waters. With that being said, if such plastic roams in the ocean for a long period of time, it will degrade into small fragments called microplastics. Microplastics are small pieces of plastic that are <5 mm in length. If ingested by marine organisms, they can be very harmful, as these particles may interfere with the organisms feeding habits, thereby impacting health and survival. The objective of this project was to examine the feeding rate of brine shrimp, Artemia salina, a model marine suspension feeder in order to better understand how they will feed in the presence of microplastics. Feeding experiments were conducted by exposing Artemia to a range of algal concentrations to determine if feeding rate was cell-concentration-dependent. Artemia (20 per treatment) were allowed to feed on algae for three hours,

during which algal concentrations were accessed at t=0, t=1 hr, t=2 hrs and t=3 hrs. Results show that Artemia feeding rate is algal-concentration-dependent, decreasing from a maximum of ~850 cells/individual/hour (in the first hr of feeding), to ~750 cells/individual/hour (during the second hour of feeding) to ~500 cells/individual/hour (in the third hour of feeding). These results show that feeding rate decreases over time and may be related to algal cell density. These results will help to design future studies examining the feeding rate of Artemia in a mixture of algae and microplastics. It is well known that large marine mammals, reptiles, and fish, consume the plastic debris that litters the world's oceans. Overtime, the plastics keep reducing in size, ultimately entering a size range available to the ocean's smallest consumers, for instance, copepods that are at the base of marine food chains. Understanding the impact of these particles on the smallest of small marine consumers will help inform decisions and guide policies regarding this important environmental issue.

CHEMISTRY

CONFERENCE LOCATION:
1ST FLOOR–FRONT (WILLIAMSON WALL)

POSTER: CHM-01

Heat Transfer on Superhydrophobic Surfaces

Louis Pimpinella
Faculty Mentor: Professor Alan Lyons | Department of Chemistry

The amount of heat transferred due to the phase change of water from vapor to liquid is much greater than heat transferred due to simple temperature change of water. This vapor to liquid transition is used in combustion power plant condensers to transport water vapor thereby powering a turbine. Thermal transfer can be greatly limited by a layer of water condensation build up. Water is an inhibitor of heat transfer due to its high heat capacity and low thermal conductivity. Water condens ation on bare metal surfaces, which are hydrophilic (attracts water), proceeds in a film-wise manner while condensation on hydrophobic and superhydrophobic (water repellant) surfaces proceeds dropwise. On surfaces that exhibit extreme superhydrophobicity, a phenomenon known as drop coalescence has been observed, which is the act of two of more water drops merging and jumping off the surface. When drops on SH surface merge, they are propelled off of the surface due to a release of surface energy, which clears the area for new water drops to condense. Because an insulating water layer does not form, superhydrophobic (SH) surfaces are being studied to improve heat transfer performance. In this project, SH surfaces made from a fluoropolymer were prepared and the condensation and coalescence rates of water droplets were characterized. Video analysis of condensation was performed (frame by frame) on different surface types in order to quantify the volume of drops that jump off the surface and clear the surface for new drops to condense.

POSTER: CHM-02

Singlet Oxygen Generation with Plastic Optical Fiber Devices

Gil Barahman (Macaulay Honors College) | **Samuel Krichavets** (The Verrazano School) | **Danielle Ohana** (Macaulay Honors College) | **Mehnoor Khan**
Faculty Mentor: Professor Alan Lyons | Department of Chemistry

Singlet oxygen ($^1O_2$) is an excited state of oxygen that has many real world applications, such as killing bacteria. It is currently being considered by dental professionals to kill the bacteria associated with periodontal disease. The current method uses a sensitizer applied directly into the periodontal pocket that limits the delivery range to about 3 mm. This is an issue, as some pocket depths reach 8-10 mm. The development of a device with the ability to deliver highly localized singlet oxygen at these depths would be a breakthrough for periodontal dentistry. Singlet oxygen is generated when a laser diode, emitting light at a wavelength of 669 nm, illuminates sensitizer particles that react with proximate oxygen gas. This reaction is carried out in a cuvette where the singlet oxygen reacts with a dilute 9,10-anthracene dipropionate dianion trapping solution. Reaction rates are quantified using UV-Vis spectroscopy. In this project, sensitizer particles were immobilized on an array of PDMS posts that were 3D-printed on the angled tip of a plastic optical fiber (POF). The reproducibility of the fabrication process and the effect of POF tip angle (30, 45) were assessed by quantifying the rate of singlet oxygen trapping. Long term stability of the devices was also determined.

POSTER: CHM-03

Anti-Soiling Properties of Hybrid Hydrophobic Hydrophilic Surfaces

Daniel Furhang (Macaulay Honors College)
Faculty Mentor: Professor Alan Lyons | Department of Chemistry

In order to unlock the full potential of photovoltaic cells, the issue of soiling must be addressed. The challenge is to create anti-soiling coatings that reduce soil accumulation on the glass surface of the cells that leads to energy loss. If the correct method is used, the surface can also take advantage of environmental conditions such as changes in temperature and humidity to become self-cleaning. In this project we developed an anti-soiling and self-cleaning coating for solar cover glass by covering the surface with a hydrophobic coating, while leaving small uncoated (and therefore hydrophilic) regions along the top. When the temperature cools, water will condense on the uncoated regions before the coated regions. We can take advantage of this feature by optimizing the hydrophilic regions to increase the size of the drops, and to decrease the time it takes for them to roll off, thereby cleaning the hydrophilic surface below.

The goal of this project is to quantify the anti-soiling and self-cleaning performance of hydrophobic coatings, both continuous and with well-defined hydrophilic regions, as compared with bare glass. In this project, the level of soiling is inferred from percent transmission measurements using a spectrophotometer, as well as image analysis using a digital microscope. The cleaning efficiency is measured by comparing the time for the entire surface to have a row of drops roll off, while in the condensation chamber.

POSTER: CHM-04

Preparation of Gelatin Sponge Mimetic Tubules Via the Injection Method for Spinal Cord Regeneration and Zinc Attachment

Ellaesea Domingo
Faculty Mentor: Professor Krishnaswami Raja | Department of Chemistry

Sponge mimetic tubules (SMT) will be generated by injecting a concentrated solution of calcium chloride into a hot solution of gelatin dissolved in sodium silicate-phosphate solution. The final constructs will be characterized via IR spectroscopy and used for 3D cell culture of neurons. The injection method will be further modified to produce tubes of uniform diameter.

POSTER: CHM-05

Micelle-Templated Synthesis of Honey-Comb Silica Structures with Very Large Cylindrical Nanopores

Jackline Fahmy (Macaulay Honors College) | **Sharfa Ahmad** (Macaulay Honors College)
Faculty Mentor: Professor Michal Kruk | Department of Chemistry

Within the recent decades, nanomaterials have become widely popular as a research field, primarily due to their potential applications in different fields of study including drug delivery and catalysis. One of the most efficient ways to synthesize nanomaterials with ordered mesopores (pore diameter between 2 and 50 nm) is by templating the pores by micelles of surfactants. The main focus of this research is to explore a new and promising selection of surfactant and micelle swelling agent pair to achieve a well-defined material with pores of unusually large size or interesting structure type. The most common types of mesoporous nanoparticles are MCM-41 and SBA-15 silicas with honeycomb structures of cylindrical pores typically of diameter between 2 and 12 nanometers, but it is difficult to obtain them with pores of diameter reaching or exceeding 30 nm. SBA-15 is typically synthesized using an amphiphilic poly(ethylene oxide)-poly(propylene oxide)-poly(ethylene oxide) triblock

copolymer, a commercially available surfactant called Pluronic P123. Surfactant molecules are with hydrophilic parts and hydrophobic parts. The hydrophilic part would interact with some other substance, such as silicate, which can result in the formation of a framework (which may be a periodic structure) under appropriate conditions. The differences in the relative volumes of hydrophobic domain and hydrophilic domain of the surfactant affect types of micelle structure that the surfactants form. For example, Pluronic P123 with dominant content of hydrophobic parts can form cylindrical micelles and templates cylindrical pores in a 2-dimensional hexagonal (honey-comb) mesoporous silica, whereas Pluronic F127 surfactant with a dominant content of hydrophilic parts primarily forms spherical micelles and templates spherical pores. However, the use of a micelle swelling agent, which swells the hydrophobic domain, can make Pluronic F127 suitable to template cylindrical pores, especially when this surfactant is mixed with Pluronic P123. In the present study, Pluronic F127 and P123 mixture was combined with an appropriately selected micelle swelling agent and was found to template very large pores of honeycomb SBA-15 silicas with high degree of structural order.

POSTER: CHM-06

In Vivo Tests of Synactib, a Synergistic Formulation of Curcumin and Cannabidiol that Potently Eliminates Panc02 Pancreatic Cancer Cells

Blossom Akagbosu (The Verrazano School) | **Ariene Ouedraogo**
Faculty Mentor: Professor Probal Banerjee | Department of Chemistry

Evading early detection efforts, the highly metastatic pancreatic cancer remains the fourth deadly type of cancer in the United States. Current treatment such as chemotherapy, radiotherapy, and surgery only remain palliative. We have shown previously that the food derived-anticancer agent, curcumin (CC), can rescue GL261-implanted glioblastoma (GBM) brain tumor mice. By screening various combinations of edible natural anticancer agents and performing IC50 determination and combination index analysis, we have formulated a synergistic combination of CC and cannabidiol (CBD) that potently eliminates Panc02 pancreatic cancer cells in vitro. In this project, we will use an orthotopic mouse model of pancreatic cancer to perform survival experiments and pharmacokinetics on C57BL6 mice using Synactib. We hypothesize that Synactib will stimulate the tumor-associated innate immune cells into a tumoricidal state to rescue mice with pancreatic cancer.

POSTER: CHM-07

Investigating the Role of Fmrp in Early Brain Development

Vitaliy Lasiychuk (Macaulay Honors College) | **Chun Xia Chen**
Faculty Mentor: Professor Probal Banerjee | Department of Chemistry

Our earlier studies used the FVBPdeFmr1(-/y) (male) and FVBPdeFmr1(-/-) (female) mice (collectively called KO mice- a model for Fragile X syndrome, FXS). Using this mouse model, studies from this group have identified a number of early markers, such as protein kinase C epsilon (PKCε) (suppressed in the hippocampal CA1 region), cell-surface glutamatergic α-amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid receptor (AMPAR) (increased in CA1), and oxytocin (OXT) (suppressed in the hypothalamic paraventricular nucleus (PVN)) that are anomalous in the KO mice during early brain development, but appear normal in adulthood. Intriguingly, the adult KO mice showed male-specific social behavior deficits and aberrant anxiety behavior relative to the wild type (WT) mice. Furthermore, treatment with a selective PKCε activator at postnatal day 6-14 (P6-14) corrected AMPAR externalization and OXT suppression at P18-20 and rescued the behavioral anomalies of the KO male mice in adulthood. This strongly indicated (i) OXT is crucial for early postnatal brain development and later-life behavior, and (ii) Fmrp plays an important role in regulating a cascade of events during early post-natal brain development. In the current project we will study the role of Fmrp in early

brain development in a mouse model (cON-CRE-ER TM) engineered to conditionally express Fmrp. In the first semester, we will use this conditional knockout mouse model cON-CRE-ER TM (Fmr1 conditional knockout cON x ubiquitously-expressed CRE-ER TM) to study the postnatal critical window of Fmrp expression for normal social behavior, anxiety, and learning in the cON-CRE-ER TM mice will be determined. In the subsequent semesters we will study the effect of conditionally expressed Fmrp on PVN OXT synthesis and PKCepsilon signaling through the AMPA receptor.

POSTER: CHM-08

Metal Binding Properties of Calgranulin C

Aneesha Nadukudiyil Jose (The Verrazano School)
Faculty Mentor: Professor Rupal Gupta | Department of Chemistry

In this project, the metal binding properties of S100A12, a protein involved in human innate immunity, was investigated. Expressed in neutrophils, S100A12 performs antimicrobial functions by sequestering zinc, which is an essential nutrient for pathogenic growth and proliferation. During infections, S100A12 executes metal binding mediated antimicrobial activities upon excretion into the extracellular space. By interacting with membrane receptors like the receptor for advanced glycation end products (RAGE), S100A12 can also initiate pro-inflammatory signaling cascades. Therefore, S100A12 is responsible for both antimicrobial and pro-inflammatory activities in the human immune system and has been proposed to be used as an indicator of disease and infection.

S100A12 is an α-helical protein with four helices (helix I-IV) and two calcium-binding EF-hand loops. It exists in dimeric form, which is stabilized mainly by the hydrophobic interaction between the helix IV and portions of helix I. In its apo dimeric form, the protein can bind to two zinc ions. Each zinc binding site is made up of three histidines (H15, H85, and H89) and, one aspartic acid residue (D25). In this binding motif, H85 and H89 belong to one subunit and H15 and D25 residues are present in the polypeptide chain of the second subunit of the dimer. This His3Asp motif can also bind to copper, however, the biological role of copper binding is unknown.

The wild type S100A12 can form oligomers when they bind to metals like zinc. Zinc binding results in the elongation of the C-terminal helix of S100A12 (residues 86Y, 87H, 88T, 90K and 91E become part of the helix). By creating a series of the mutant by mutating these polar residues at the C terminal tail to alanine, the role of these residues in oligomerization was studied. By using size exclusion chromatography, it was investigated whether the mutants were able to form oligomers in the presence of zinc. From the studies, it was found that the mutants Y86A H87A T88A90 oligomers in the presence of zinc. This mutant will be investigated by using NMR spectroscopy to examine the mechanism of oligomerization.

POSTER: CHM-09

Role of C-terminal Residues in the Oligomerization of S100A12

Deniz Kuci (Macaulay Honors College)
Faculty Mentor: Professor Rupal Gupta | Department of Chemistry

S100A12, also called Calgranulin C, is a 92-amino acid immune system protein released by leukocytes that is a part of the S100 family of proteins. S100A12 has an alpha helix structure and participate in metal sequestration, which involves binding of metals such as Zn2+ and Ca2+ to the protein at specific sites. This protein is crucial in defending the body against pathogens because it directly competes for Zn2+. Pathogens need Zn2+ to colonize and promote virulence in the body. Our innate immune system limits the presence of available Zn2+ for pathogens by sequestering this metal. This metal plays a role in cell structure, cell signaling, and catalyzing reactions. S100A12 has two binding sites for Zn2+ comprised of the amino acid residues H15 and D25 for one subunit and H85 and H89 for the other subunit. S100A12 normally remains in dimeric form until binding occurs at these specific amino acid residue sites. When metal ions such as Zn2+ and Ca2+ bind to the dimeric protein,

oligomerization occurs. This process involves conversion of the dimer into a more complex oligomer, such as a tetramer or hexamer. When S100A12 oligomerizes, it can become a tetramer if only Zn2+ binding occurs or a hexamer if coordinated Zn2+ and Ca2+ binding occurs.

The goal of this project is to examine the properties of S100A12 when the protein is mutated. We will test to see if the mutant K90stop would still oligomerize when it binds to metal ions. Purification of this protein mutant will be done by anion-exchange chromatography and size-exclusion chromatography. Structural studies of the protein will then be performed using nuclear magnetic resonance (NMR) spectroscopy.

POSTER: CHM-10

Site-directed Mutagenesis to Investigate the Oligomerization of S100A12

Gianna Marchisella (Macaulay Honors College)
Faculty Mentor: Professor Rupal Gupta | Department of Chemistry

S100A12 is a protein that has an important role in the body's immune system. It captures metal ions, specifically zinc, so pathogens that need transition metals for their cellular metabolism are unable to continue to function. When Zn binds to S100A12, S100A12 changes from a dimer to an oligomer. Based on previous study, this oligomerization appears to be relevant to S100A12's function. S100A12 has two binding sites in its dimeric form. In order to investigate the binding site and oligomerization, a mutant of S100A12 was synthesized and studied to see how the structure of the protein changed when zinc bound to it. S100A12 has 92 residues. The mutant studied in this project was K90stop. The original amino acid residue at 90, lysine (K), was replaced by a stop codon, cutting off the last three residues of the protein. This mutant was studied to learn whether these amino acid residues are significant in S100A12's oligomerization when metals are bound to it. If the mutated protein stayed a dimer when zinc was bound to it, this would indicate that these particular residues that were cut off may be important for S100A12's oligomerization.

Previous study of this mutant via size exclusion chromatography observed that K90stop did not oligomerize upon addition of zinc. This implies that the last three amino acid residues may have an important role in the oligomerization of S100A12 when zinc binds to it. In this project, NMR experiments were conducted to confirm this and learn more about the mutant's structure when zinc is bound.

POSTER: CHM-11

Analysis of Toxin Binding to KcsA

Joseph Mule
Faculty Mentor: Professor Sebastien Poget | Department of Chemistry

Potassium ion (K+) channels are transmembrane, prokaryotic proteins spanning the entire lipid bilayer that allow the specific flow of potassium ions through the membrane at near- diffusion speed. These channels are studied extensively in ion channel research due to the fact that the amino acid sequence in the selectivity filter of KcsA is highly conserved among both prokaryotic and eukaryotic K+ channels. Thus they are involved in such processes as nerve transmission and regulation of the heartbeat by participating in the establishment of the membrane potentials. Due to this role, they are targets for many animal peptide toxins. These toxins can either deactivate or activate the channel. This may cause neurons to lose their ability to excite, causing paralysis, and if untreated death. The Poget lab previously identified a toxin (Tx7335) from the Eastern green mamba snake that activates the bacterial potassium channel KcsA. In order to figure out how the toxin interacts with the potassium channel, we will express wild-type and mutant KcsA protein, and see how these mutations affect toxin binding. My findings may assist in the development of drugs that target this active site, as

well as give a better understanding of the structure and function of KcsA. I have positive results for expression of WT KcsA in bacteria, purification and reconstitution of the ion channel into lipid vesicles using the protocol established for wild-type (WT) KcsA. I also incorporated the proteoliposomes into an artificial membrane in a bilayer workstation. This instrument allows the recording of electric currents caused by the flow of potassium ions through open channels in the membrane. My latest results include the electrical activity of the WT KcsA. I will be expressing, purifying, and reconstituting a mutant KcsA channel much in the same way. Channel activity before and after the addition of toxin of both WT and mutant KcsA will be compared. If the mutations affect the binding of the toxin, the mutant channels should experience a smaller effect upon toxin addition compared to the WT channels. Identification of a number of channel residues involved in toxin binding will allow for the exact mapping of the toxin interaction site.

POSTER: CHM-12

Isolation of Membrane Proteins Using SMA

Soukaina Chyat
Faculty Mentor: Professor Sebastien Poget | Department of Chemistry

Membrane proteins perform a variety of functions including acting as receptors, transporters, enzymes and cell adhesion molecules. A major obstacle in studying membrane proteins is their isolation from the membrane while preserving their native structural conformation. Transmembrane proteins are embedded in the lipid bilayer through hydrophobic interactions with the center of the phospholipid bilayer. These interactions help stabilize the protein. In order to isolate these proteins from the lipid bilayer, we need to disrupt the hydrophobic interactions. Detergent molecules are used to extract these proteins. However, using detergents does not fully conserve the structural conformation of the protein, often destabilizing the protein and leading to loss of function. A different approach to isolating integral membrane proteins is using amphipathic styrene-malefic acid copolymers (SMA), which solubilize the membrane proteins including a small amount of surrounding lipids.

In this project, we use SMA as an alternative way to isolate the potassium channel KcsA. KcsA is a transmembrane protein found in prokaryotes. It allows the rapid and selective diffusion of potassium ions across the membrane down their electrochemical gradient. The stability and function of KcsA is strongly affected by the lipid environment. Thus, using SMA to isolate KcsA will retain the native fold of the protein, allowing us to study its function. Specifically, we will test the stability and functionality of the reconstituted samples and assay different SMA polymer lengths and compositions for their effect on particle size and functionality.

Transformation of E.coli cells with a plasmid containing the potassium channel gene was performed. A large scale culture of these bacteria was grown and SMA was prepared and added to the lysed cells. Ni-affinity chromatography was used to isolate the Kcsa-containing Nano-discs. The KcsA-SMA complex was confirmed to be present in the lysed sample through SDS/PAGE analysis. KcsA is affected by many toxins , including Tx7335 which increases channel opening. We will study the interactions of Tx7335 with SMA-solubilized KcsA, Using surface plasmon resonance to directly measure the binding affinity and kinetics of toxin binding.

POSTER: CHM-13

Expression and Refolding of a Human Sodium Channel Voltage-Sensing Domain

Jack Rogers (The Verrazano School)
Faculty Mentor: Professor Sebastien Poget | Department of Chemistry

Nav1.7 is a sodium channel primarily found in the peripheral nervous system and has been found to be highly linked to pain perception. This channel contains a series of four repeated voltage-sensing domains within the protein (VSDs 1-4). Certain peptide toxins that can be found in nature can bind to this channel with high affinity and specificity, resulting in its inhibition. Among these toxins is the Tarantula-derived Protoxin II (ProTxII). Despite recent progress in the structural studies of Nav1.7, some molecular details of the Nav1.7 VSD/ProTxII complex are still missing. More complete knowledge of the molecular interactions and dynamics of the toxin-VSD complex could facilitate the rational design of molecules targeting this channel, potentially leading to new pain therapeutics. This is supported by studies showing that loss-of-function mutations in this channel can cause a complete loss of pain perception in mice, indicating that selectively blocking these sodium channels can be an effective and useful way to treat pain in a non-addictive fashion. The voltage-sensing domains in human Nav1.7 (including VSD-4) are known to interact with a significant number of tarantula toxins, including protoxin II.

As such, my research focuses on the expression of VSD-4 protein and the study of its interactions with various tarantula toxins. The first step of this process was to design a gene that encodes for the fourth repeated VSD of Nav1.7 (1.7R4VSD). After this, the gene was cloned into an expression plasmid (pSW02). After the successful completion of this initial experiment, we are now working on expressing Nav1.7R4VSD protein in another strain of E.coli designed to express proteins. Afterwards, the expression will be scaled up and an attempt will be made to purify and isolate the Nav1.7R4VSD for NMR-based structural studies.

COMPUTER SCIENCE

CONFERENCE LOCATION:
1ST FLOOR–FRONT (WILLIAMSON WALL)

POSTER: CSC-01

Emot-iCan

Ethan Binyaminov (The Verrazano School)
Faculty Mentor: Professor Deborah Sturm | Department of Computer Science

This research project is part of a larger effort to assess and possibly remediate emotion recognition issues in individuals on the autism spectrum. In particular we are developing an iPad app to measure over-selectivity, where individuals focus on specific aspects of a situation or environment while ignoring others (Ploog, 2010). The iPad game, emot-iCan, was developed by Dr. Sturm (Computer Science) and Dr. Ploog (Psychology) (Sturm, Peppe & Ploog, 2016). In emot-iCan, the player matches a visual or audio stimulus with comparison images, each with a differently expressed mouth, eyes, or both. The application collects data based on the player's choices, which will produce a better understanding as to whether or not a child with autism pays attention to only some parts of the face. The study and development of emot-iCan is on-going and preliminary results will be presented.

POSTER: CSC-02

Chemiga (Educational Chemistry Game)

Nora Elattar (The Verrazano School)
Faculty Mentor: Professor Deborah Sturm | Department of Computer Science

Serious games can play an important role in education since modern day students use technology for their studies. However, if there is a way to make learning more fun, students would be more engaged. Serious games provide a more engaging experience in terms of learning and understanding different concepts. For this project we extended an educational game that teaches chemical compounds and formulas. Using Unity with C# scripts, this game was inspired by Galaga, an old space shooter game, to help assist students in learning chemistry. In a previous study college students from BCC played the game. In a non-honors class, 37% of students named the compounds correctly before playing the game, and 62% named them correctly after playing. Moreover, the retention rate of this group was impressive with only one out of 22 students dropping the course, compared to a control group where 11 dropped the class. As this game continues to expand, the expectation is that there will be continued improvement in the outcomes and students will be motivated to learn using serious games.

POSTER: CSC-03

Modeling Collaboration between Autistic Players using a Kinect Game

Konstantin Novichenko (CUNY Research Scholars Program)
Faculty Mentor: Professor Deborah Sturm | Department of Computer Science

We are extending a research game that is designed to study the collaborative and emotion recognition abilities of players on the autism spectrum. The main goal of the project is to help people on the autism spectrum communicate and collaborate. Players view animations before each scene and solve a puzzle by picking the appropriate emotion of the protagonist. We expect that when an expert player models the behavior, a novice player will learn game mechanics and will communicate more as the game progresses. Expert peer modeling should improve the novice's understanding of the gameplay, thus motivating them to continue. It also should improve the engagement between players and their overall experience.

POSTER: CSC-04

Classification of Image Noisy Data with Convolutional Neural Networks

Christopher Harris (Macaulay Honors College)
Faculty Mentor: Professor Natacha Gueorguieva | Department of Computer Science

Neural Networks (NNs) are systems patterned after the operation of neurons in the human brain. There are two major categories of NNs: shallow networks and Deep Learning Neural Networks (DLNNs). While shallow NNs usually have a single hidden layer between the input and output layer of the network, DLNNs have multiple hidden layers between the input and output layers of the network. Hidden layers of DLNNs create abstractions with different depth which are then used to learn the desired generalized representation. The latter allows them to build more accurate representation in learning massive datasets. The attractiveness of DLNNs comes from their flexibility to incorporate prior knowledge by modifying connection weights between layers. Neural networks can be trained to optimize their performance in a specific area. Convolutional Neural Networks (CNNs) are a type of supervised DLNNs which specialize in various computer vision tasks. CNNs are designed to automatically and adaptively learn spatial hierarchies of features through backpropagation by using multiple building blocks, such as convolution layers, pooling layers, and fully connected layers. CNNs treat each image pixel as a separate neuron with its own parameter to be learned. Convolution layers allow the entire image to share the same kernel parameters. Furthermore, the inputs are not treated independently (like in a shallow NNs) because the kernel is looking at a number of surrounding pixels simultaneously.

The goal of this research is to study how the noise added by altering the pixel values of the test set affects the accuracy of CIFAR-10 dataset.

POSTER: CSC-05

Mobile Phone-based Assisting System for Visually Impaired Individuals

Suresh Melvin Sigera
Faculty Mentor: Professor Shuqun Zhang | Department of Computer Science

Computer vision methods have been widely used for blind assistance, which usually requires multiple usage of cameras to detect objects and audio equipment to generate continuous warnings to the user. In this project, we develop a prototype system of blind-assistant object finding and distance measurement by using a mobile camera only. A deep-learning neural network is employed for object detection and recognition. Each object's distance is measured after camera calibration. The system outputs an audio warning when the user is too close to the object that is in front of them. Experimental results performed in different functionality scenarios demonstrate the feasibility of the proposed prototype system.

POSTER: CSC-06

Investigating Differences between Sets of Remote Hosts

Sean Connor (The Verrazano School)
Faculty Mentor: Professor Xiaowen Zhang | Department of Computer Science

There are several protocols for estimating the number of differences between multiple sets each held on remote hosts. By modifying the counting bloom filter, it allows us to minimize communications sensitive network applications. This includes data synchronization in mobile works, gossip protocols and content delivery networks. A bloom filter is a probabilistic data structure that is used to represent a set and checks for elements that are a part of that set. A counting bloom filter is essentially a bloom filter that has had its single-bit Boolean values replaced with n-bit integers. This allows the filter to take up a lot more space than a regular bloom filter. In return we get an upper-bound count for insertions of a specific element and can remove them from the filter. This exposes the possibility of false negatives if we remove an element that was never in the counting filter. Having the ability to estimate the number of differences between two remote data sets is a fundamental importance to networking applications that contain weak data under constraints on power, communication or computation. The difference estimate can help a person choose data synchronization protocol to minimize communication constraints. They could also be used to fine-tune gossiping applications or manage overhead data replication.

POSTER: CSC-07

Bloom Filter Based Multi-user Authentication Schemes in Wireless Sensor Networks

Matthew Henschke (The Verrazano School)
Faculty Mentor: Professor Xiaowen Zhang | Department of Computer Science

Broadcast authentication is essential in wireless sensor networks (WSNs). It permits mobile users of WSNs to send messages securely to multiple sensor nodes. Public-key primitives, such as digital signature and elliptic curve cryptography can be utilized to authenticate nodes in WSNs, meanwhile bloom filters are used to achieve storage efficiency and communication efficiency between mobile users. A bloom filter is a probabilistic, space-efficient data structure that is used to represent a set and check for membership of elements in that set. This approach to maintain broadcast authentication involves storing the hash mappings of each sensor node pair (ID, public key) in the bloom filter that is being used. When a sensor node obtains a broadcast message, it validates the user public key by checking if its hash mapping exists in the bloom filter. If hash mapping is not in the filter, then the message is dropped. One drawback of using a bloom filter is the possibility of false positives, where a sensor node pair is accepted which is actually not valid. However, selecting the appropriate bloom filter parameters: number of elements that are going to be stored, bloom filter size, and number of hash functions used by the bloom filter addresses this issue.

POSTER: CSC-08

Locating Regions of Interest for Possible Nodules in Lung CT Images Using Convolutional Neural Networks and Merging Algorithms

Daniel Ladner (Macaulay Honors College)
Faculty Mentor: Professor Yumei Huo | Department of Computer Science

Models for cancer detection in computed tomography scans tend to have high computational costs. To reduce computational cost and improve performance, preprocessing methods are used for dimension reduction of raw CT scans and regions of interest isolation. In this very first step, recall is prioritized rather than precision. Covering all nodules and eliminating irrelevant regions will produce a simpler diagnosis task for further analysis. Instead of the traditional preprocessing methods, which usually includes a series of operation like thresholding, shape filtering and vector quantization, we explore the use of a convolutional neural network as a one-step method in finding regions of interest in larger samples that may be isolated for closer inspection. The CNN was trained using 8638 of the 9614 32x32 extracted patches. The remaining 976 patches were used as a testing set. The average center distance between predicted and actual nodules was 2.5mm. The recall of the nodules was .95. The algorithm found 67 false positives per scan. Our proposed CNN model could have high recall on suspicious candidate detection and is competent for one-step preprocessing, which is efficient and effective. Then a false positive reduction action could be taken as the next step for accuracy nodule detection.

POSTER: CSC-09

Solving Cybersecurity Problems Using Machine Learning

Asliddin Asliev
Faculty Mentor: Professor Yumei Huo | Department of Computer Science

Data science is transforming the world's industries. In a society more driven by information than ever before, the valuable insights that we can glean from data are creating new ways of doing business. Data science can help correlate alerts and anomalies to identify common entities - such as user account or system resources - that may be under attack. Data is used for both building the threat intelligence and extracting the actionable information from the logs.

In this research, we will apply Logistic Regression, Support Vector Machine and Convolutional Neural Network to detect Malicious URLS. Moreover, we will analyze and compare each algorithm.

POSTER: CSC-10

Aiding People with Visual Impairment Using the Internet of Things

Syed Raza | Justin Winn
Faculty Mentor: Professor Zhanyang Zhang | Department of Computer Science

Physical infrastructure in major cities is experiencing many challenges as the global population is rapidly increasing. Upgrading infrastructure is necessary to ensure that the vital needs of all citizens are met and that the environment is safe and accessible to all. But while the world progresses, the challenges faced by disabled persons, such as the visually impaired, are only being more enhanced as pathways once taken are changed or no longer available. Physical accommodation is not enough as navigating through urban cities becomes harder for visually impaired people. The cyber physical concept is the solution to bridging the gap between the physical world and cyber world which is constantly collecting information from an Internet of Things (IoT) embedded into the physical infrastructure. The physical space of visually impaired persons can be made more accessible and safer with the use of real-time data from cyberspace, thus enhancing their experience and navigational abilities.

CURRICULUM AND INSTRUCTION

CONFERENCE LOCATION:
2ND FLOOR–WALKWAY

POSTER: C&I-01

Games in the Classroom

Annalise Puntorno (The Verrazano School)
Faculty Mentor: Professor Judit Kerekes | Department of Curriculum and Instruction

Games in the classroom will involve a class of second graders that will play educational games to help facilitate learning. The students will play one game revolving around English Language Arts and one game in Math. The ELA game would be about non-fiction text features. Each student would have a head band with their text feature on it. The student wearing the text feature guesses as the others give clues to what the text feature is. Each student would get the chance to go. The Math game would be building on the skill of addition. Two students would receive a number card 1 through 10 and put it on their head without looking. The leader would add the two numbers and tell the students the sum. Then the students would need to figure out what number they are by knowing their partners number and counting up or subtracting from the sum. The research would examine how successful the games were and compare them to regular teacher based instruction. The improvement will be assessed based on a test.

POSTER: C&I-02

Clinical Interviews

Caterina Tribuzio | Natalie Russo | Briana Ackermann | Vanessa Misuraca | Gloria Carrasco | Ellen Arkor Amankwaah
Faculty Mentor: Professor Judit Kerekes | Department of Curriculum and Instruction

Clinical Interviews are interviews that are typically used by physicians, psychologists, and researchers to make an accurate diagnosis. In this case the Clinical Interview issued in an educational setting. A Clinical Interview is conducted one-on-one, and begins with an ordinary question, but the teacher then organizes the following questions based on the response from the child to observe conceptual understanding. Conducting interviews in this manner is considered non-standardized because each interview will lead to different results. Researchers and teachers have found that clinical interviews commonly provide a more precise assessment compared to other types of assessment, due to the fact that they offer a deeper outlook on students' thinking, their perspective, and even misconceptions.

For our project, we conducted clinical interviews on three different elementary students who were five years old, collecting a total of 360 units of data. The objective is to analyze students thinking and reasoning. This will be helpful to any future educators understanding of how or why a child is thinking the way they do. These clinical interviews were conducted three times on two different days in multiple elementary classrooms. The reason behind this, is so that we can show that everyone's thinking process is different than the next. Comparing the data will benefit educators and further expand their knowledge of understanding children's thinking process.

ENGINEERING AND ENVIRONMENTAL SCIENCE

CONFERENCE LOCATION:
1ST FLOOR–FRONT (SPRINGER WALL)

POSTER: ENS/ESC-01

Behavior of Niobium and Zirconium in Coexisting Siliceous and Mafic Melts

Ryan Callaghan
Faculty Mentor: Professor Alan Benimoff | Department of Engineering and Environmental Science

In the Palisades Sill on Staten Island, New York, is a great example of mafic and siliceous magmas coexisting. The diabase of the intrusive Palisades Sill and a pyroxene Trondhjemite derived by fusion of the margins of a xenolith from the Lockatong Argillite gives us an interesting look at how these magmas coexisted and how Niobium and Zirconium behaved in these melts. These elements are present in all three rock types, and after core sampling we can see how they behaved as well as why they behaved that way. The lack of water in the Trondhjemite magma creates a highly viscous magma. Although this magma diffuses ions across it, it cannot reach an equilibrium to disperse ions of each element evenly throughout each sample. Instead the ions diffuse into the Trondhjemite and end up getting stuck in the viscous magma, creating an amalgamation of both elements in the Trondhjemite while the diabase and xenolith have a lower concentration of both elements. This indicates that although the magmas were not miscible, they were still able to exchange ions in the liquid-liquid state they were in millions of years ago, even if they were not diffused equally.

POSTER: ENS/ESC-02

Chemistry of Olivine in Staten Island Serpentinite

Sara Kominoski
Faculty Mentor: Professor Alan Benimoff | Department of Engineering and Environmental Science

The Staten Island Serpentinite was mapped by Lyttle and Epstein (1987) as a lens shaped body whose long axis trends NE-SW. This is one of the many discontinuous ultramafic bodies that extend from Quebec, Canada into the southern Appalachians. Samples for this study were collected from an excavation for a shopping center in the Staten Island Serpentinite (N 40.58° and W 74.11°). The average composition of the serpentinite at this location is SiO_2 34.96, Al_2O_3 0.21, CaO 0.04, MgO 41.41, Na_2O<0.01, K_2O 0.03, Fe_2O_3 7.66, MnO 0.01, TiO_2 0.02, Cr_2O_3 0.44, and LOI 15.57 sum 100.36 wt %. Benimoff and Lupulescu (2008) reported on zoned accessory Cr-Spinel in this serpentinite body. They plotted the Cr-spinel analyses in the Cr/(Cr+Al)sp vs. Mg/(Mg+Fe)sp of Coish and Gardner (2004) where the analyses plot in the forearc peridotite field. In this preliminary study we have added two new olivine analyses to the Coish and Gardner (2004) plot. Electron microprobe analyses were used to compute the following empirical formula: $Mg_{1.87}FeO_{0.16}Ni_{0.015}(Si_{0.98}O_4)$. These olivine compositions average Fo92. The olivine of this study plots in the ophiolitic harzburgite field in the Olivine Spinel Mantle Array (OSMA) of Coish and Gardner (2004). According to Coish and Gardner (2004) this could be interpreted as evidence for the residual origin of the peridotite represented as refractory mantle residues. This could be further evidence in support of a Supra-Subduction zone (SSZ) ophiolite.

POSTER: ENS/ESC-03

Design and Control of a Low-Cost 2D Plotter

Mobin Uddin Chowdhury | Melvin Summerville
Faculty Mentor: Professor Aleksandar Haber | Department of Engineering and Environmental Science

The aim of this project is to develop a low-cost 2D plotter capable of accurate reproduction of trajectories defined by the user. The developed plotter has a Cartesian configuration and consists of two stepper motors controlling the X and Y axes using the system of pulleys and belts. The pen of the plotter is attached to one of the axes. The feedback information about the pen position is provided by two encoders. The control system consists of an Arduino microcontroller and two stepper motor drivers. Using the encoder feedback information, the PID controller generates control voltages for the stepper motor. The developed control system is able to attenuate system vibrations and to reject external disturbances. In this way, the system positioning accuracy and trajectory tracking performance is significantly improved. Our preliminary results show that such a low-cost system is able to achieve a 100 micrometer positioning accuracy. In our future work, the developed system will be used to test advanced machine learning algorithms for improving its performance. Due to the fact that the working principle and configuration of the developed 2D plotter is similar to a large variety of mechanical systems, such as for example, 3D printers, CNC machines and laser cutters, the results and insights obtained in this project can be useful for improving the performance and accuracy of a large-number of mechatronics systems.

POSTER: ENS/ESC-04

Estimation of Dynamical Models using Machine Learning Techniques

Francesco Pecora (CUNY Research Scholars Program)
Faculty Mentor: Professor Aleksandar Haber | Department of Engineering and Environmental Science

Dynamical systems are everywhere around us. Typical examples of dynamical systems are swinging pendulums, autonomous driving vehicles, rockets, the human heart, flow of water through a pipe, etc. In order to develop control algorithms for such systems, it is crucial that we know their mathematical models. However, we usually do not know accurately all the physical constants describing such a model, or we are not able to measure them. Due to this lack of knowledge, the design of control algorithms can often be a challenging problem.

In order to overcome this difficulty, in this research project, we investigate the possibility of using machine learning techniques to learn the models of physical systems. To experimentally validate this approach, we have constructed a dynamical system consisting of a 2-meter aluminum rod whose temperature is controlled by 4 heaters. The temperature distribution along the rod is measured using 8 thermocouples. The dynamics of such a system is described by the heat equation with convection and radiation boundary conditions. We use the Recurrent Neural Networks (RNNs) to learn the model from the applied heat power and observed temperature change. Our preliminary results show that a low-dimensional RNN is able to accurately estimate the model. In our future research, we will use the estimated model to design a temperature control algorithm.

POSTER: ENS/ESC-05

Low-Cost Facial Recognition System

Hala Basyouni (CUNY Research Scholars Program) | **Laila Basyouni** (CUNY Research Scholars Program)
Faculty Mentor: Professor Aleksander Haber | Department of Engineering and Environmental Science

The purpose of the research is to develop a low-cost system for facial recognition. The system consists of a web camera and a Raspberry Pi microcontroller. The facial recognition algorithm is based on Convolutional Neural Networks (CNNs) and it is implemented using the Python programming language and "TensorFlow" machine learning library. The CNN is trained using a series of images. The main challenge in developing such a system was the fact that we are not able to collect a large number of images for training the algorithm. We have investigated and experimentally verified several methods for overcoming this problem. First, we have increased the number of images by creating new images that are shifted and scaled versions of the existed images. Secondly, we have improved the learning process by starting it from pre-trained models of CNNs. Currently, we use a laptop computer for network training and validation. Our future research will be directed toward the implementation of such a system on a Raspberry Pi microcontroller.

POSTER: ENS/ESC-06

Using Machine Learning and Brain Signals to control Robots

Miguel A. Hurtado (CUNY Research Scholars Program) | **Marjan Perbibaj** (CUNY Research Scholars Program)
Faculty Mentor: Professor Aleksander Haber | Department of Engineering and Environmental Science

This interdisciplinary project aims at developing a low-cost non-invasive Brain-Computer Interface (BCI) and Machine Learning (ML) algorithms for controlling complex mechatronics systems such as robotic arms, drones, 2D plotters, etc. One of the main motivations for performing this research originates from the fact that BCI systems can help persons with spinal cord injuries or other mobility-limiting neurological disorders, to use mental commands to operate wheelchairs, prosthetic limbs or other mechanical devices. The BCI system is composed of a low cost ElectroEncephaloGraphy (EEG) data acquisition card, Arduino microcontroller and a stepper motor. The system detects EEG signals induced by blinking, and translates them into the desired mechanical motion of the stepper motor. We use ML and signal processing techniques to interpret the measurements and to compute the control actions for the stepper motor. Our experimental results show that the stepper motor can be reliably controlled by blinking commands. In our future research we will use the developed system to control more complex mechatronics devices, such as drones and robotic arms.

POSTER: ENS/ESC-07

Ferromagnetic Detection

Ohiosoje Abraham | Omar Zanati | Yasmeen Abedelwahab
Faculty Mentor: Professor Alfred Levine | Department of Engineering and Environmental Science

Every day in life we deal with magnets whether we are aware of it or not. From speakers and microphones to the household refrigerator magnet, the application of magnetisms proves useful. This project will utilize a particular type of magnetism known as ferromagnetism. Ferromagnetism is the phenomenon of some metals having the capability of permanent magnetization and exhibiting a magnetic field. Some application of ferromagnetism includes electromagnets and transformers.

The goal of this project is to construct a Ferromagnetic detection system that detects the presence of ferro magnetic metals. Ferromagnetic detection uses passive sensors that evaluate disturbances in the Earth's magnetic field made by something magnetic moving through its detection zone. This system is

primarily implemented in applications such as MRI (Magnetic Resonance Imaging) safety, and counterterrorism procedures. The project will build a system on a smaller scale using a metal detection sensor (drv425) along with specific circuit designed for that purpose.

POSTER: ENS/ESC-08

Quality Control

Jonnathan Andrade
Faculty Mentor: Professor Alfred Levine | Department of Engineering and Environmental Science

Quality Control is the task of assuring that the products reach a certain standard, either set by the company or by the customers. In the jewelry industry, the quality control process involves experienced inspectors to examine the products based on the benchmarks for product quality, to make sure all the pieces are intact and secure. Every single piece of jewelry must pass quality control inspection before being sent out to the customer if it does not, the item goes back to the jewelers for touch-up before returning back to quality control for a second round of inspection. This project will demonstrate that the process can be controlled and standardized to ensure that product quality could be improved with either reduced or zero errors, which will result in higher quality and lower costs. Image processing will be the key function to achieve the objective of this project. Through image processing, an image is divided by a number of pixels along the length and width of the image. Each pixel contains information that will be used to determine certain characteristics such as shape and dimensional measurements of the object. The process will consist of two phases. The first phase is of learning the characteristics of the ideal or reference object. The second phase is the comparison and distribution of the objects of the production line. In this phase if the object has the same characteristics as the ideal object the quality control would pass, while otherwise the object will be sent back to the production line to be fixed and put back for quality control until it is similar to the ideal object.

POSTER: ENS/ESC-09

Increasing Solar Panel Efficiency with Thermoelectric Cooling

Danielle Dadona | Bahira Akramy (The Verrazano School) **| Raven Fakoya**
Faculty Mentor: Professor Alfred Levine | Department of Engineering and Environmental Science

To increase the power output of a solar panel, obstacles to its efficiency need to be addressed. Adequate power output is contingent on an ideal operating temperature. Photovoltaic panels are composed of solar cells that absorb energy from photons emitted by the Sun. Solar cells are made of semiconductor material so that electrons flow freely when energy is transferred from the photons. This creates a flow of DC current. Output power decreases as the cells overheat. The energy of an electron at rest is higher than that at lower temperatures. This decreases the potential difference between the electron at its rested and excited states. Thermoelectric cooling (TEC) could be controlled to maintain the solar panel within a suitable range of operating temperatures. TEC consists of a Peltier device, which transfers heat from one side to the other with the application of a voltage. Simply including a switch to connect or disconnect it from the voltage source can control the Peltier device. The application of thermoelectric cooling to increase, or at least maintain, the efficiency of a solar panel provided the opportunity to study the Peltier Effect and its importance for future technology. We investigate whether TEC could optimize the power output of a solar panel while using less energy than lost to the Peltier device.

POSTER: ENS/ESC-10

Design & Implementation of a Receiver for Cyber-Enabled Displays

Bahira Akramy (The Verrazano School)
Faculty Mentor: Professor Mark Feuer | Department of Engineering and Environmental Science

The concept of cyber-enabled displays (CEDs) involves a set of methods by which a display could present an image to its human viewer while simultaneously transmitting high-rate data to a smartphone or other digital device. Light-Emitting Diode (LED) displays typically use the three color model, mixing light from Red, Green and Blue (RGB) emitters to create millions of distinct colors. CEDs use RGB emitters to support two modes of communication: the human and cyber mode. The human eye averages over any changes faster than about 60 frames per second, so the human mode is fairly slow. However, both LED emitters and digital cameras can run at rates faster than this, enabling the cyber mode of communication in which each emitter is switched ON and OFF at rates faster than the human eye can follow. Special digital coding methods balance the ON/OFF flashes to assure that the perceived color of each pixel is correct, allowing the human and cyber modes to operate at the same time, with no loss of visual image quality. To recover transmitted data bits, a software interface is needed to overcome the mismatch between LED and camera pixels, optical distortion, and other impairments. For example, Bayer interpolation is used in cameras to assign an R, G, and B value to each pixel location, even though each pixel sensor captures only one color. (Values for other colors are computed by interpolating from nearby cells.) In a CED system, Bayer interpolation introduces crosstalk between pixels that have been independently switched, interfering with accurate data reception. Thus, when decisions are made on the pixel brightness to obtain the received bit values, errors may be induced.

For the present study, a CED system containing an array of 32x64 RGB LED emitters and a camera was used to transmit and capture image frames. A software receiver designed for non-Bayer interpolated images was developed in LabVIEW and used to count the number of errors in the received data, compared to the transmitted bit pattern sent to the LED display. An automatic threshold for bit decisions was set up to minimize detection errors. After optimization, non-Bayer interpolated images were used to recover 2048 parallel channels of data, for a total data rate of 1.91 Mb/s, with zero error rate.

POSTER: ENS/ESC-11

On the Automatic Tuning of a Musical Drum

Kevin A. Patzer | Mohamed Elsayed
Faculty Mentor: Professor Alfred Levine | Department of Engineering and Environmental Science

In order for two musical instruments to sound “good” when played simultaneously they need to be in tune with one another. This means that the frequency of the vibration pattern of each separate musical instrument must interact in a “constructive” way to “resonate” with one another. To practically implement this, you must “tune” the resonant frequency of the instrument to be used. On a drum there are sets of screws that can be tightened or loosened to proportionally change the resonant frequency. By tightening the screws, the frequency or pitch is increased and visa versa. Traditionally a drum is tuned by uniformly hand tightening/loosening each screw until the desired frequency is achieved. This can take several minutes depending on the experience of the person tuning the drum. This project aims to automate that process. The computer will listen for the current frequency and adjust accordingly until the desired pitch is reached. It will consist of three major parts. First is the listening part which will determine if the current frequency is above or below or at the desired frequency. The second part will make the mechanical adjustments to the screws accordingly. The third part is a comfortable user interface that allows the musician to choose the frequency they want to tune to.

POSTER: ENS/ESC-12

Intelligent Toys for Intelligent Dogs

Vinson Ruan | Keanu Lyles-Hale
Faculty Mentor: Professor Alfred Levine | Department of Engineering and Environmental Science

Many individuals worldwide own and care for dogs. In most cases these animals have become integrated into the model family structure. Our canine companions have certain heightened senses such as smell and sight (motion detection), these aid in supporting their instinct to hunt. Since dogs for the most part are entirely domesticated, the only chance where they get to act on this instinct is through the act of play. Although due to different personal schedules, many pet owners do not have the adequate free time to fully exhaust this hunting impulse through play. One way to allow these instincts to be satisfied in absence of the owner is to have a toy that interacts with the dog, requiring no human interaction. This project does just that. Using motors (motion) and scented pads, the dog will remain engaged and entertained. When the dog is within 5 feet of the toy it attempts to move away from the dog, but when the dog is not within 5 feet of the toy it attempts to return to within 5 feet of the dog. This in effect creates a constant chasing loop, satisfying the hunting instinct instilled in these animals.

POSTER: ENS/ESC-13

Improvement to Bicycle Safety Using LIDAR

Karl Suarez | Alexander Ab
Faculty Mentor: Professor Alfred Levine | Department of Engineering and Environmental Science

Every year there are incidents that occur when cyclists are hit from behind from distracted or reckless vehicle drivers. Bicycle safety can be defined as the use of safety practices to reduce risk associated with cycling. The goal of this design is to give cyclists the tools to monitor the road from behind while keeping their eyes on the road. The system that we have designed will alert the rider of an approaching vehicle coming from behind. Our system will display the distance of the vehicle from the rider and the speed of the vehicle relative to the rider. The key component of our system is a lidar sensor, which can detect objects from a distance up to 9 meters. Lidar is a surveying method that measure distance to a target by illuminating the target with pulsed laser light and measuring the reflective pulses with a sensor. We are hoping to improve bicycle safety by alerting the rider with incoming hazards without diverting the rider's eyes from the road.

POSTER: ENS/ESC-14

Appropriate Energy Resource

Luan Tran | Tao Chen
Faculty Mentor: Professor Alfred Levine | Department of Engineering and Environmental Science

In some district areas such as Cai Be, Vietnam, inadequate street lighting has led to major accidents resulting in broken arms or legs. For those who are poor, the consequence of paying a hospital bill could lead to homelessness or criminal activity. In order to prevent such unfortunate situations, we came up with a project which can possibly cost less; that is, to build an array of LED, operated completely by solar energy. Our preliminary research has shown that LED is the best option due to its cost effectiveness, efficiency and extended lifespan when compared to other light bulbs such as incandescent, fluorescent (CFL), etc. One single LED can produce a large amount of lumen. Our findings demonstrate that the intensity is immense, at every angle. We are currently in the process of obtaining more data.

POSTER: ENS/ESC-15

Self-Cleaning Solar Cells Using Anti-Soiling Applications

Pi Yan | Jeanette Takle
Faculty Mentor: Professor Alfred Levine | Department of Engineering and Environmental Science

Photovoltaic solar cells are capable of converting solar radiation in the visible spectrum to electrical energy. Solar panel efficiency is dependent on many factors, one of which is weathering, which can degrade solar cell performance due to abrasion and soiling. Soiling is defined as dust and dirt deposition on the surface of solar panel glass. The dust accumulates on the surface of solar panel glass, casting a shadow on the photovoltaic cells (PV) beneath, thus blocking light from reaching the PV cell, reducing the efficiency of the PV panel. The presence of water, together with dirt is shown to increase the severity of soiling on uncoated (hydrophilic). Water occurs naturally on solar panels in the form of dew and light rain. Cleaning of solar panels with dust chemically bonded to the glass requires use of detergents and/or mechanical force, which add operations cost.

Hydrophilic molecules are attracted to water and hold moisture because they are polar and ionic, therefore the water drops spread along the surface forming a water film/layer which simply suspends the dust in the water layer and redeposit it randomly after drying. By modifying glass surfaces with hydrophobic coatings (fluorinated siloxane compounds), we allowed water to condense on the surface dropwise (increase contact angle), limiting the dust particle mobility and preventing the chemical reactions between the dust and the surface. Hydrophobic surface which allow the water drops to remain in a high contact angle state, will also allow the drops to easily slide off the surface at low tilt angles, allowing the glass to be cleaned with just water.

As stated previously, dew accelerates soiling on hydrophilic glass but not on hydrophobic glass, therefore our approach was made to actually utilize the dew on hydrophobic surfaces, as a source of water for cleaning of the hydrophobic glass surface. Experiments were conducted to condense water on soiled hydrophobic surfaces until dew drops were big enough to slide off and clean the hydrophobic glass surface. We used the Aquapel coating (commercially available) to render the glass hydrophobic. Results have shown that hydrophobic coated glass has lower soiling rates and facilitated cleaning using condensed water drops in controlled settings.

POSTER: ENS/ESC-16

More Effective Method of Current Measurement on PCB Traces

Frank Vargas | Brian Tress
Faculty Mentor: Professor Alfred Levine | Department of Engineering and Environmental Science

Printed circuit boards (PCB) are found in relatively every modern electronic item sold today. They have miniaturized modern electronic devices and helped aid the modern electronic revolution, as well as decreased manufacturing costs and labor. They are comprised of a non-conductive fiberglass board with copper wires (also referred to as copper traces) that mechanically support and electrically connect electronic/electrical components.

As integrated circuit chips have shrunk in size, so have the wires to interconnect them. In order to test these circuit boards, engineers take testing precautions when making a prototype PCB design. When the final design is completed the testing materials are removed from the circuit design. When testing fully developed products, the process can be difficult and possibly cause damage to the circuit. Our goal is to design a device that can easily measure the magnetic field generated from a trace without altering the PCB. When the board is powered on, electricity flows through the copper traces and produces a magnetic field. As defined by Ampere's law, the current flowing through a wire is proportional to the produced magnetic field. Our project will utilize a miniaturized fluxgate magnetometer to detect, amplify and measure both the magnetic field and current on the PCB.

POSTER: ENS/ESC-17

Lucid

Frank Vargas | Keanu Lyles-Hale
Faculty Mentor: Professor Dwight Richards | Department of Engineering and Environmental Science

This work presents the LUCID monitoring and visualization application (LMVA). LUCID is a comprehensive software application for visualization, animated commentary and broadcast of cyber security competitions. It seeks to engage the audience at cybersecurity defense competitions by presenting information pertinent to understanding the real-time events occurring on networks of competing teams as they unfold. The role of LMVA, which is the key component of the overall system, is to monitor critical services and attacks on the blue teams networks and host computers. We will discuss the following software modules of LMVA: Network Monitoring and Logging Subsystem, Database Management System and Web Services, and LUCID Visualization Application and Browser. Results will be presented showing how these modules are used to detect and visualize Distributed Denial of Service (DDoS) and the states of critical services running on blue teams hosts such as MySQL database, Secure Shell (SSH), and Network Time Protocol (NTP).

POSTER: ENS/ESC-18

Grounding and its Correlation to Safety

Lauren Zaluk (The Verrazano School)
Faculty Mentor: Professor Dwight Richards | Department of Engineering and Environmental Science

Do workers realize the severity and risks of working on high energy electrical equipment? Do they understand how grounding of metal structures work, and why it is very important for human safety? It is important for every utility or construction worker to understand the dangers of high energy electrical equipment and how it can harm their bodies if in contact with high voltage and current. The Occupational Safety Health Administration (OSHA) states that electrocution is one of constructions fatal four. The fatal four includes falls, being struck by an object, electrocution, and being crushed in between an object. In the article "Electrical deaths in the US construction: An analysis of fatality investigations," it states "the construction electrocution rate has risen to be more than seven times that the average of all industry as a whole". In this project, I researched scholarly papers, articles, and national electric codes that explain what grounding is, what a proper grounding grid should consist of and what materials need to be used. I use them to prove why it is necessary to ensure the safety of workers, and reported a detailed incident where the improper grounding resulted in a fatality. Such incidents are analyzed in order for me to discuss and describe how the problem could have been prevented. The project also describes my internship experience at Con Edison with a particular emphasis on the safety measures that I learned.

POSTER: ENS/ESC-19

Does Staten Island Have a Problem With Microplastics? A Pilot Study of Lemon Creek

Ting Ting Chen (CUNY Research Scholars Program)
Faculty Mentor: Professor Jane Alexander | Department of Engineering and Environmental Science

Microplastics are the most prevalent type of marine debris and commonly found in marine environments. They are found as different types of tiny shapes that harm our environment and have a massive impact on marine life. (Tiny bits of these plastics can have impacts on the marine life. This marine life is our food source.) This came to be a concern when large amounts of microplastic were found floating in marine area such as oceans and beaches. There is not a single reason why microplastics have been increasing every year. Our purpose for this research is to determine the prevalence and nature of microplastics on Staten Island shore.

We are working on two locations in Staten Island to do this research and I am presenting results from Lemon Creek. In this research, we will collect samples such as sediments that come with different types of shapes of microplastics. We will do measurements of size and mass in order to determine the size and nature of the particles. We will use a binocular microscope to examine each sample to characterize the microplastics. The grain size composition of the sediments will be determined by sieving. We will make comparisons between plastic accumulation and sediment texture.

POSTER: ENS/ESC-20

Does Staten Island Have a Problem With Microplastic? A Pilot Study of South Beach

Alex Fiero (CUNY Research Scholars Program) | **Ting Ting Chen** (CUNY Research Scholars Program)
Faculty Mentor: Professor Jane Alexander | Department of Engineering and Environmental Science

Microplastic comes from the breaking down of plastic objects and collection of micro fibers that come from clothes, the debris is dumped and can be found on beaches which can potentially affect the marine life. The intended research is an environmental survey of micro plastic on the beaches of Staten Island and the purpose is to collect information and record how much microplastic can be found in the sand. We will be using glass cylinders to collect various samples of the beaches based on tidal conditions, e.g. hightide v. low tidal marks. We will have a reference sample to compare with to account for contamination on our part. Ideally most of the equipment used will be glass, but the reference will aid to accurate measurement. We will then do a density separation of the microplastic using a NaCl solution and mixing with the sand, the micro plastic will separate from the sand and be collected then measured. We will measure the total mass of the plastic in the sediment and make visual observations from the collected samples.

POSTER: ENS/ESC-21

Chemical Analysis Relevance of Major, Trace, and Rare Earth Elements from Japanese Sedimentary Rocks

Marlena Kozyra | Gadrielle Chen
Faculty Mentor: Professor Jane Alexander | Department of Engineering and Environmental Science

This project analyzed 30 different Japanese sedimentary rock samples to observe possible anomalies within them. In each sample, the trace and rare earth elements were also plotted as concentrations to help identify visible patterns. Comparing the data from these graphs to the average concentrations within chondrites, the Upper Continental Crust (UCC), and the North American Shale Composite (NASC) through normalization of the values. The oxide percentages of the major elements of these samples were then calculated from their chemical composition and plotted on a discriminant diagram to categorize their type. Normalizing the data to chondrites, the UCC and the NASC show anomalies of abundances and depletions, which are highlighted in this project to show how they correlate to the type of sedimentary rock, as defined by the major element discriminant diagram. Observations from this analysis suggest that the greatest amount of enrichment or depletion of trace and rare earth elements are present in mudstone samples 11, 68, 72, 74, 75, sandstone sample 63 (Litharenite), and pyroclastic sample 39.

POSTER: ENS/ESC-22

Building Design Engineering Internship Capstone

Michael Pataffi (The Verrazano School)
Faculty Mentor: Professor Vinay Vaishampayan | Department of Engineering and Environmental Science

Over the summer of 2018, I participated in an off-campus internship. I worked for an engineering company called R.G. Vanderweil Engineers. There, I worked in their electrical department with various Electrical Engineers. Throughout my internship, I have done research on the process and day-by-day stage development of projects that my colleagues and I have worked with.

Throughout my internship, I mainly worked with light fixtures. From my internship along with other research, I have learned how to determine the right amount of light fixtures that should go in each space. I also researched how to obtain the wattage of certain light fixtures, along with how light travels. I have also done research on how many lights could be connected to a single switch. I will explain my research on the different type of switches and the roles they play pertaining to certain light fixtures and rooms throughout building designs. Throughout this project, I will explain how I have determined placement of these light fixtures, along with the placement of emergency lighting and exit signs. Lastly, I have also briefly worked with power systems such as receptacles. I will also go over my research on how electrical outlets work, and the importance of GFI receptacles.

Most of my research done shows why there are certain standards for building design. These standards, for engineering purposes, are mostly set by the IECC. The IECC is the International Energy Conservation Code. The IECC is a tool used by jurisdictions to ensure that when new or remodeled buildings are built/remodeled, they achieve a specific quantifiable level of energy efficiency. There are also other codes and rules put into effect during building design engineering. I will show some examples of these codes, along with why certain codes are put into effect when working with my assigned projects. Also, I will focus on my role on these projects, as I work to understand the results derived from my projects. Within this project, I also will provide a summary of weekly journal entries throughout my internship, including information on projects along with things I have learned throughout the process.

ENGLISH

CONFERENCE LOCATION:
2ND FLOOR–WALKWAY

POSTER: ENG-01

Miscue Analysis: A Developmental Tool for Linguistic Cognition

Nicole Bossert (The Verrazano School)
Faculty Mentor: Professor Barry Sheinkopf | Department of English

Miscue Analysis is a collaborative task involving both the teacher and student. This process records and analyzes miscues as well as reading patterns, and emphasizes a reader's strengths. Interestingly, miscues aren't always disadvantageous. As readers become more proficient, the brain begins to merge words or sentences, in order to read more efficiently. Miscues become an issue when they are no longer effective. Readers draw on three distinctive cueing systems: syntactic, semantic, and graphophonic. If the sentence is altered structurally or visually after reading, the student has miscued ineffectively. Both students with learning disabilities as well as English language learners (ELL) frequently participate in miscue analysis. This process helps teachers pinpoint a reader's specific weakness. That information is analyzed and addressed in prospective lesson planning. Over the course of this semester, I will be deeply exploring the benefits this learning tool has to offer. I plan to employ journals and articles containing actual data on, and results of, this process. I will compare results from different studies and determine which achieved the best outcome. I'm interested to see how miscue analysis is becoming more popular in classrooms around the world. By the end of my research, I will be able to spread awareness of the positive results this teaching method has to offer.

POSTER: ENG-02

Representation of Autism in Literature

Janice Parikh
Faculty Mentor: Professor Lara Saguisag | Department of English

Autism, a neurodevelopment disorder, affects as many as one in fifty nine children. There have been many organizations and events around the world that recognize those who are on the spectrum. In recent years, autistic characters are being presented in media more, which allows their narrative to be seen alongside other neurotypical characters. As literature progresses, authors are showing more of an interest in representing neurodiversity. One major step is that characters who are on the autism spectrum disorder are being represented as the main character in many young adult fiction books. With books such as Mockingbird by Kathryn Erskine (2010), The Curious Incident of the Dog in the Night-Time by Mark Haddon (2003), On the Edge of Gone by Corinne Duyvis (2016), and many more, children on the spectrum are being given the main roles and having a whole plot built around them. With the increasing representation of autism in literature, it also allows readers to expand their mind beyond seeing a character who only has a neurodevelopment disorder. Readers are seeing the narrative through the eyes of a character who is on the spectrum, and this allows us to get a look into their world. In seeing how these characters think and view the world, the reader is able to connect to the character and essentially see they are capable of doing activities the same as those who are not on the spectrum. However, as authors have begun to portray autistic characters in their books, they have only presented a high functioning child on the spectrum. These high functioning characters all portray similar traits of being gifted in STEM or art, being incapable of empathy, and being introverted. As seen in Curious Incident and Mockingbird, the main characters are seen to be high functioning adolescents who are introverted and cannot comprehend emotion, but have a gifted talent. However, there are other high functioning characters, such as Denise from On The Edge of Gone, who does not have a gifted talent, is able to fend for herself, and acts on the emotions she is feeling. Autism has a wide spectrum with those on the high end and low end of it, however authors should include a diverse range of characters on the spectrum instead of their typical high functioning gifted characters.

ENGLISH/LINGUISTICS

CONFERENCE LOCATION:
2ND FLOOR–WALKWAY

POSTER: ENG/LING-01

Articulatory Coordination in Complex Speech Sequences

Lorenza Colonna
Faculty Mentor: Professor Christina Hagedorn | Department of English/Linguistics

What makes a speech sequence easy or difficult to produce? Complex speech sequences, including consonant clusters, require precise coordination of distinct speech movements, and have been observed to be among the most challenging speech sequences to produce. Additionally, consonant clusters are acquired relatively late in the developmental sequence (Smit et al., 1990) and occur relatively infrequently in the languages of the world (Maddieson 1999). While past studies have posited hierarchies of motor complexity for consonant clusters based on age of acquisition and impressionistic perception of acoustic data (Catts & Kamhi, 1986; van Doorn et al., 2001), no work thus far has provided a quantitative index of complexity using speech kinematic data reflecting the very movements that give rise to the acoustic signal perceived by listeners. In this study, we use flesh-point tracking kinematic data and two variability analyses to test whether clusters requiring coordination of independent articulators (e.g., /sp/) or clusters requiring two distinct movements of biomechanically linked articulators (e.g., /sk/) are more motorically challenging. Extensions of this work to clinical populations will be discussed.

POSTER: ENG/LING-02

Motor Learning of Non-Native Speech Sequences

Estie Szczupakiewicz (The Verrazano School)
Faculty Mentor: Professor Christina Hagedorn | Department of English/Linguistics

Speech production requires a substantial amount of complex motor movement. As native speakers of a given language, we are constantly rehearsing and repeating these movements, creating patterns with our vocal tract articulators. Over time, we grow accustomed to producing certain consonant clusters and exhibit no difficulty bringing our articulators together to produce these clusters of our native language. However, when a native speaker of English begins to learn a new language containing "non-native" clusters (i.e., those that do not exist in English), they may exhibit certain difficulties, and require practice to produce the clusters successfully. This project investigates the learning trajectory of non-native consonant clusters by native speakers of English. The data analyzed was collected using an electromagnetic articulograph in the Motor Speech Laboratory at the College of Staten Island.

POSTER: ENG/LING-03

A Longitudinal Study of Speech Motor Control Development

Nicole Ianni (The Verrazano School)
Faculty Mentor: Professor Christina Hagedorn | Department of English/Linguistics

Each word that we produce requires a particular set of movements of the articulators within the vocal tract. Using a longitudinal studies approach, speech acquisition data can be obtained at repeated intervals of time, so that improvements in a child's speech motor control over time can be documented. While observation of this development is typically done impressionistically as a child matures, this type of observation tends to be highly subjective in nature. Using both formal and informal assessments, we can more quantitatively and objectively track changes in a child's speech development over time. The use of a formal assessment such as the Goldman-Fristoe Test of Articulation (GFTA) allows for evaluation of the child's speech through testing 23 consonant and 16 consonant cluster sounds in a variety of syllable and word positions of Standard American English.

Informal assessments of speech, on the other hand, provide a more naturalistic speech sample. This case-study project focuses on quantitatively investigating patterns in speech development in a young child over time, using both formal and informal assessments.

POSTER: ENG/LING-04

Prosody and Speech Production Planning: Evidence from Spoken Pause Durations

Olivia Ayala
Faculty Mentor: Professor Jason Bishop | Department of English/Linguistics

This study explores the effect of prosodic structure on silent pause duration in spoken English. Defining prosodic structure within the Autosegmental-Metrical framework, two main hypotheses were tested on a preexisting corpus of read speech by English-speaking adults. First, I tested whether the length (in syllables) of an upcoming prosodic phrase predicted silent pause duration. Second, I tested whether the complexity (presence of embedding) of an upcoming prosodic phrase predicted pause duration. Variation across speakers in the relation between prosody and pause duration was also explored. In this presentation I discuss the consequences of the findings for our knowledge about how prosody defines the units for speech production planning.

HISTORY

CONFERENCE LOCATION:
2ND FLOOR–EAST LOUNGE

POSTER: HST-01

May Shinto be With You: Examining Japanese History's Influence on George Lucas' Star Wars

Jesse Jordan (The Verrazano School)
Faculty Mentor: Professor Richard Lufrano | Department of History

American culture has idolized the institution of Hollywood for decades. Every year Americans flock to the cinemas in droves to witness the next cultural phenomenon, a trend that has ceased to end in the twenty-first century. Despite the myriad of film franchises produced every year, one franchise has remained culturally relevant in American popular culture for over four decades -- Star Wars. George Lucas' space saga has stood the test of time, creating countless sequels, books, comics, and television shows that have endured for years, capturing the imaginations of children and adults across the country and the world. It was arguably Lucas' achievements as a storyteller that attributed to the success of Star Wars (1977) and its subsequent sequels in the decades after. Even though some film critics praised his originality in storytelling, Lucas actually took ideas from history to craft the story of his American movie franchise. Specifically, the filmmaker was inspired by the histories of England, Germany, China, and Japan. However, Lucas drew from Japan's history more than any other nation's past to create his American film franchise. In essence, Lucas' "original" story is in fact an assortment of important events, ideas, and historical developments stolen from a different nation's past. This paper argues that Japanese history served as the paramount inspiration for the creation of the popular movie/entertainment franchise known as Star Wars by examining the religious, cultural, and political dimensions of Japan's rich society.

MANAGEMENT

CONFERENCE LOCATION:
2ND FLOOR–WALKWAY (WILLIAMSON WALL)

POSTER: MGT-01

Literature Review on Big Data and Data Mining

Miriam Shmueli (The Verrazano School)
Faculty Mentor: Professor Chandan Acharya | Department of Management

By definition, big data refers to the collection of all data and our ability to use it to our advantage across a wide range of areas, including business. Data mining is a hybrid of artificial intelligence, statistics, database systems, database research, and machine learning (Marr, 2017). This literature review will address how the core elements of big data in conjunction with data mining helps to improve an organization's productivity. In this essay, I will address the following questions: why is big data becoming a necessary ingredient for a company's long-term viability? Why is the usage of data mining an important tool in analyzing big data? The answer to these questions will be better understood from the examples provided in this paper.

POSTER: MGT-02

Team Composition Inputs: Its Effectiveness Towards Achieving a Workteam's Desired Goal

Melonie Lopez
Faculty Mentor: Professor Chandan Acharya | Department of Management

In this paper, I will address the issue related to team composition inputs. Specifically, I will explore questions such as: What are the different variables that contribute to a team achieving its desired goal? Why does individual-level attributes determine the overall performance of a team? Each team member's skills, knowledge, personality, race, culture, values, and gender are individual-level attributes that can be an advantage or a hindrance in teamwork. These factors can determine how a team comes to a consensus on issues, and how they resolve conflicts in the process of achieving their expected goals. Lastly, I will also present the advantages of teamwork in an organization, including the collaboration and synergistic effect.

POSTER: MGT-03

Leadership's Influence on Employee Motivation and Performance

Andrew M. Carlo (The Verrazano School)
Faculty Mentor: Professor Isabel Rechberg | Department of Management

Leadership entails the capability to structure employee motivation and performance within the workplace. Motivation expresses employees' responsiveness to goals and objectives set forth by management. Stimulating employees, by motivating them intrinsically and extrinsically, to excel in performance under strenuous circumstances may be challenging, however managers can refer to various leadership styles to overcome these impediments. Performance is recognized as the accomplishment of an objective measured against the preset known standards of precision, totality, and diligence. The aspects that can impact employee performance involve reciprocation, recognition, reliability, respect, and responsibility (Five R's). For the purpose of this research study, Goleman's six leadership styles: affiliative, authoritative, coaching, coercive, democratic, and pacesetting will be measured to identify which of these styles best qualify in achieving employee motivation and performance in the workplace. Through an analysis of the Five R's, it is made evident that the affiliative, authoritative, and coaching leadership styles are prominent in reaching employee motivation and performance.

POSTER: MGT-04

Reasons for Employee Attrition and Ways of Prevention in Small and Medium-Sized Enterprises

ChenJing Jiang
Faculty Mentor: Professor Isabel Rechberg | Department of Management

From a management perspective, the biggest loss to a company is employee attrition. Employees are a company's greatest asset, and the recruitment and training of employees is expensive and time-consuming. Effective managers know the value of each of their employees, and consistently work to retain quality employees. However, the balance between a company's expectations and employees' needs for fair treatment in the workplace may be conflictual. This study will identify some of the factors that lead to employee resignation in small and medium-sized enterprises. It will be studied how the work environment provided by employers may lead to employee resignation. After identifying the causes, this paper will offer suggestions to aid employee retention. The aim of this work is to aid companies to run human-centered enterprises that recognize the needs of employees, enabling the retention of well-trained, quality employees over time.

POSTER: MGT-05

Corporate Social Responsibility: A Universal Competitive Business Strategy

Michael Proscia (Macaulay Honors College)
Faculty Mentor: Professor Isabel Rechberg | Department of Management

The purpose of this study is to identify whether companies are able to sustain a competitive advantage (SCA) while using corporate social responsibility (CSR) as a backbone. To demonstrate the universality of CSR as a viable strategy, this study will compare three case studies in different economic systems and countries. The analysis is based on small and medium sized fashion companies in Italy and France, three noodle firms in Nepal, and 12 corporations in Zimbabwe. Using primary and secondary data, the correlation between their CSR activities and its effects on their competitive performance is analyzed. The findings of this study indicate that CSR is a key tool for companies to create a SCA. There is a significant positive correlation between CSR and innovation, increased demand for products, and high customer loyalty. CSR is directly linked to the fulfillment of societal needs and, therefore, a positive brand image and facilitated cooperation from stakeholders. The results show that CSR allows for the mutual growth of business and society. This study has implications for the future of business ethics and how to run an efficient and successful business universally. This research represents a basis for future studies to not only explore the relationship between CSR and SCA, but also to analyze the relationship between other potentially valuable corporate activities and SCA.

POSTER: MGT-06

Management Beyond Borders

Robert Xhelili (Macaulay Honors College)
Faculty Mentor: Professor Robert Allen | Department of Management

As our world becomes increasingly more globalized, it has become even more imperative to learn about global stances and viewpoints in a variety of fields. Worldwide cooperation on trade and finances has promoted the importance of globalization within the business community, in particular. Specifically, business management, one of the integral parts of the business identity, has been influenced by globalization. Despite there being an overarching global community and the existence of global standards, business management practices tend to vary around the world. Therefore, my undergraduate research will focus on the influence of a nation's history and culture (via Hofstede's six dimensions) on management beliefs and practices. As part of my research, I will discuss management styles and characteristics of the following nations: Brazil, Czech Republic, Nigeria, Egypt, and Japan. By studying historical and statistical information related to each nation, management in all parts of the globe can be compared. The results of this research project are designed to provide readers with a better understanding of management beyond borders.

MARKETING

CONFERENCE LOCATION:
2ND FLOOR–WALKWAY (WILLIAMSON WALL)

POSTER: MKT-01

BREXIT

Lalita Chindarad
Faculty Mentor: Professor Alan Zimmerman | Department of Marketing

When speaking of the United Kingdom (U.K.), we are referring to four island countries: England, Wales, Scotland and Northern Ireland. The U.K. is a member of the European Union (EU) since 1973. After forty-three years of a rocky relationship, the U.K. wants to leave the bloc. The process of leaving the bloc, is named as BREXIT. The intricate process officially began on Thursday, June 2016 resulting from a Referendum, a public vote of all U.K. citizens. The voters in the U.K. were asked whether their kingdom should remain in the European Union and the result was astonishing. The majority, 52% or about 17 million, people voted to leave the EU.

In this BREXIT research, my goal is to first analyze the rocky relationship between the U.K. and the EU from past decades. Then I will define the major reasons why a majority of British and Irish want to leave the EU, the world's largest single market. Furthermore, I will research the possible issues that the United Kingdom may encounter after the exit, such as immigration, Northern Ireland's border, and the country's economic forecast. BREXIT is a complex and ongoing process which everyone hears about from the media on a daily basis since June 2016. From all my findings, I truly believe I will help many people, including myself, to better understand the true nature of this critical process as it involves one of the world's largest trading blocs and the British, formerly the world's largest empire.

POSTER: MKT-02

Counterfeit Cosmetics and their Impact in the Cosmetic Business

Marilena Gropatsakis
Faculty Mentor: Professor Alan Zimmerman | Department of Marketing

The purpose of this paper is to analyze the counterfeit cosmetics business and the various ways it impacts the legitimate cosmetics industry. Counterfeit cosmetics is a growing business and it is important to understand it so that industry and consumers can take action against it.

My paper summarizes various aspects of the counterfeit cosmetics business, how counterfeit cosmetics are being made, by whom and for what purpose, as well as the impact this business has on legitimate cosmetic companies, such as loss of sales, wrongful advertisements and loss of status. I also analyze the various ways the cosmetic industry is trying to fight counterfeits and what actions consumers can take to protect themselves.

POSTER: MKT-03

Using Sentiment Analysis to Assess Privacy Content in Social Media Posts

Weicong Feng
Faculty Mentor: Professors Paolo Cappellari and Soon Ae Chun | Department of Marketing

Social network platforms are changing the way people interact not just with each other but also with companies and institutions. In sharing information on these platforms, users often underestimate potential consequences, especially when such information discloses personal information. For such reason, actionable privacy awareness and protection mechanisms are becoming of paramount importance. In our research, we propose an approach to assess the privacy content of the social posts with the goal of: protecting the users from inadvertently disclosing sensitive information, and rising awareness about privacy in online behavior. Our contribution is to analyze the relationship between privacy and sentiment or subjectivity. The general intuition will think that people will express more

subjectively when they are emotional and will be more likely to disclose private information. As a result, stronger sentiment or subjectivity filter could be helpful for improvement of the accuracy of privacy analysis. Initial experimental results show that higher sentiment and subjectivity filtering are not conducive to the improvement of the accuracy of privacy assessing models. In fact, data shows that there is an inverse correlation between sentiment (or subjectivity) and privacy disclosure, independently of the chosen classification model.

POSTER: MKT-04

Analyzing Privacy Policies in Government Agencies

Victor Arroyo
Faculty Mentor: Professor Soon Ae Chun | Department of Marketing

Online services and transactions with businesses and the voluntary sharing on online social media are the new daily landscape of our digital era. The privacy challenges of digital data have emerged as one of the most pressing societal issues. The personally identifiable information (PII) or personal data, includes (1) any information that can be used to trace an individual's identity, e.g. name, social security number, DOB or biometric records and (2) any other information that is linked or linkable to an individual, such as medical, educational, financial, and employment information. The FTC and EU have been expanding the PII or personal data as they enforce the privacy laws. The online businesses and social media organizations need to specify their privacy policy that could be presented to the consumers on their data collection, sharing, and processing policies. In this study, we investigate the privacy policies of the government agencies which also collect the citizen data and compare them across different cities and states, and with the privacy policies of commercial businesses. There are best practices in the business environment, but it is not well studied on the status of privacy policy practices of the state, city and local governments in their online services. This study also develops a database and search portal for privacy policies of government agencies easily and to compare them. The comparative tool could provide a way to analyze privacy policies of government agencies by types or locations.

POSTER: MKT-05

Understanding Citizen Needs and Government Actions: Visual Analytics and Next Generation Chatbot based Staten Island NYC311 Citizen Complaints

Abnerson Ocampo
Faculty Mentor: Professor Soon Ae Chun | Department of Marketing

NYC311 service is to allow citizens to report the issues related to non-emergency city services and city government programs. NYC311 is available online, by mobile app, text messages, and by phone. It provides important insights on a variety of city dwellers' daily requests on services and their expectations from city government agencies. Citizens can submit complaints on diverse topic categories, such as business, civic services, culture & recreation, education, environment, health, housing & development, public safety, social services, transportation. Each category has several subtopics that are targeted to over 130 city agencies. 311NYC service generated 44 million transactions in 2018. In order to leverage this big data to help the city agencies improve service delivery, it is essential to analyze the datasets and understand the citizen needs. In this research, we utilize the visual analytics to identify top complaints and evaluate the agency response times to the issues, and to gain some insights for temporal and spatial patterns of complaints. We focus on understanding the Staten Island citizens issues and agency response patterns. We present the data analytics using Tableau visualization tool, and a Web application where the complaints can be

submitted using a chatbot, which may be the next generation 311NYC interactions. Using the data analytics, citizens could be informed of the pressing issues common in the community nearby and be more aware of the efficiency of government agencies. These insights can in turn be utilized to demand better government services.

POSTER: MKT-06

Predicting Consumer Decisions Using Big Data: Contemporary Marketing in Practice

Kevin Ferger | Nicholas Pepitone | Kenneth De Young
Faculty Mentors: Professors Nancy Guo and Paolo Cappellari | Department of Marketing

GFK's 2019 NextGen Hackathon challenged us to complete a set of research objectives aimed at developing a new smart speaker within a 10 day deadline. Through the use of data sets provided by GfK, complemented by external data we collected by ourselves, we were able to make marketing and research & development recommendations based on popular consumer preferences. Demographic and consumer behavior datasets were used to derive useful insights and potential customer targeting strategies, data referenced including Point of Sale (POS) information, MRI consumer surveys, and eWOM. By cross-referencing various datasets we were able to determine consumer appeal as well as correct for limitations associated with imperfect data.

We performed a SWOT analysis based on the current AI speaker industry followed by STP analysis, and results suggested that our ideal customer would be a female modern music lover primarily between the ages of 18-34 with at least $75k in total household income. We then imported thousands of online reviews into a machine learning algorithm in order to conduct a sentiment analysis. Our results displayed a strong correlation between cylindrical shaped speakers with a sleek finish and customer satisfaction. The data also suggested that consumers prefer speakers to be approximately 250 cubic inches. These findings were consistent across different regional and demographic markets such as the UK, Germany, and the US. By observing sales evolution trends, we were also able to identify a growing demand for high-resolution audio, multi-room functionality, bluetooth capability, and built-in artificial intelligent systems and thus these features were also included in our product proposal.

MEDIA CULTURE

CONFERENCE LOCATION:
2ND FLOOR–WALKWAY

POSTER: MC-01

The Marvel Cinematic Universe within the Film Industry

Liam Gilbride (The Verrazano School)
Faculty Mentor: Professor David Gerstner | Department of Media Culture

Over the past ten years, "shared movie universes" have become a rapidly growing phenomenon within the film industry. "Shared movie universes" occur when a single studio creates multiple movies using a variety of different directors and characters, each standing as an individual film, while also serving a much larger narrative that spans across them. Warner Bros.' "DC Extended Universe" and "MonsterVerse", Universal's "Dark Universe", and Fox's "X-Men" franchise are all examples of this trend, with Marvel Studios' "Marvel Cinematic Universe", or "MCU" being arguably the most prominent of these. But just what impact has the MCU had on the modern film industry?

By examining the secondary literature on this topic, I will investigate the prolonged financial successes that these types of movies have had insofar as they guide the choices made by film studios. I will then consider studio expectations as they bear on the filmmakers creative decisions and limitations when making these films. Because of films' place as some of the most consumed media across the globe, as well as the key role of the filmmaker as today's storytellers, the completion of this research will highlight this rising trend in order to understand the transformation in industry and creative practices.

POSTER: MC-02

Gender Roles and the Portrayal of Superheroes

Cassandra LoFaro (The Verrazano School)
Faculty Mentor: Professor Edward Miller | Department of Media Culture

Over the course of the last century, superheroes have influenced our world sphere in print, in television, and in film. Within the last decade, cinematic universes, such as the Marvel Cinematic Universe and the DC Extended Universe have dominated the box office and have captivated audiences with the plight of the modern superhero. One of the most overarching, yet often unaddressed, themes of these universes is the portrayal of gender and gender stereotypes.

By researching gender portrayal and stereotypes, we are able to classify what makes a superhero so valiant and uncommon, why the portrayal of men and women is often drastically different from one another, and how sexism is confronted in current installations of comic book movies. In addition to this, there are significant differences between the ways that superheroes are portrayed in comic books as opposed to film, in which an actor portrays a version of a character previously only drawn. In the film adaptation, aspects of performance, such as costuming, hair and makeup, voice, body type, and acting style come into play and impact the representation of gender.

POSTER: MC-03

Manipulating Neural Pathways to Efficiently Learn Material Under a Short Duration

Dileepa Galagedera (The Verrazano School)
Faculty Mentor: Professor Jillian Báez | Department of Media Culture

This literature review will explore potentially effective techniques that aid in boosting the neurochemical signaling in the brain which mediates neural plasticity. As neural plasticity facilitates long-term retention of new cognitive skills, if successful, these methods would, therefore, apply to a wide range of cognition-relevant tasks. The final outcome expected out of this review is to discover techniques that would aid in effectively learning the material in a short period of time with the least bit of effort.

The review's primary focus is to discover the different techniques that can be used to influence neural plasticity, and how these techniques can be applied. The premise of the review will be based on understanding the cognitive skill learning process, and the different regulatory pathways.

POSTER: MC-04

The Effect a Woman's Menstrual Cycle has on the Tearing of her ACL

Megan McEwan (The Verrazano School)
Faculty Mentor: Professor Jillian Báez | Department of Media Culture

Injuries are common, especially for an athlete. The tearing of one's Anterior Cruciate Ligament (ACL) is very challenging and requires extensive recovery. Menstrual periods affect many aspects of womanhood including her hormones, ligaments, and muscles. My study will determine whether a woman is more likely to tear her ACL during her menstrual cycle. My research will also answer the larger question of how hormonal differences between men and women play a role in the likelihood of injury. Learning the effect and correlation between a woman's menstrual cycle and the tearing of her ACL will help further research on how to prevent these injuries from occurring. Studies indicate that physical therapy plays a big role during the rehabilitation after an ACL post operation. However, learning if there are certain triggers from a male or female's hormones that affect the stability of their ligaments can help physical therapists develop certain program preventions to help these hormones to not have as strong of an impact. Studying the hormonal effects of men and women who have torn their ACL will help show a correlation of which aspects they are affected by. In addition to reviewing the relevant scholarly literature, 100 female teenage athletes who have torn their ACL will be interviewed on whether their injury occurred during their menstrual cycle or not. These findings will help demonstrate whether the menstrual cycle has a direct correlation or not. The goal of this research will be to identify the correlation of a woman tearing her ACL during her menstrual cycle and designing ways to prevent this issue.

NURSING

CONFERENCE LOCATION:
2ND FLOOR–WEST LOUNGE

POSTER: NRS-01

Opioid Withdrawal

Jessica Salerno (Macaulay Honors College)
Faculty Mentor: Professor Barbara Schiano | Department of Nursing

Opioid addiction is prevalent in today's society. Although they are deemed safe when taken as prescribed, many people become addicted to opioids because they induce pleasure and relieve pain. However, withdrawing from opioids is not easy. Withdrawal ranges from mild to severe, and individuals can experience a variety of symptoms including body aches, diarrhea, vomiting, and restlessness. Since withdrawal is unpleasant and difficult, there are medical treatments to help people withdraw from opioids. These treatments include methadone and naltrexone. Although, they help with opioid detoxification, these drugs are not a cure. Maintenance treatments are often needed after treatment. Some effective maintenance treatments include buprenorphine, methadone clinics, and Narcotics Anonymous. Maintaining abstinence and sobriety is a challenge for many individuals who have abused opioids. Therefore, it is essential that those addicted to opioids utilize medical treatments and seek support from others.

POSTER: NRS-02

Opioid Addiction

Laura Wetz (Macaulay Honors College)
Faculty Mentor: Professor Barbara Schiano | Department of Nursing

Opioid addiction is a growing problem in the United States. The problem is so large that it has become thought of as a crisis. Despite efforts to combat this crisis, it still persists. There are many opioids that play a part in this crisis some of which include heroin, fentanyl, and methamphetamines. This essay looks at theories on how the crisis started. Some theories include healthcare providers loose prescribing methods and patient satisfaction surveys. The effect of opioids does not just effect the person taking them, but their family and society as a whole. The essay will give an overview of the opioid crisis in hopes of providing information on how to combat this ongoing crisis.

POSTER: NRS-03

The Implications of Adolescent Reproductive Behavior

Samantha Iervolino (The Verrazano School)
Faculty Mentor: Professor Danna Curcio | Department of Nursing

This research will look to impart information about adolescent pregnancy and teenage reproductive health. Implications of adolescent pregnancy including health outcomes and suggestions to help individuals and couples when faced with these issues will be discussed. Information on empowerment will be addressed to allow for educated decisions related to sexual health. Nursing implications and considerations will be introduced, discussed, and suggested. After evidence-based research is presented, a pamphlet will be created to educate adolescents on pregnancy and sexually transmitted disease (STD)/sexually transmitted infection (STI) prevention and management.

POSTER: NRS-04

Growing Adolescent Pregnancy in Costa Rica

Patrick Tayag
Faculty Mentor: Professor Regina Gonzalez-Lama | Department of Nursing

Adolescent pregnancy is a social problem in many countries. In Costa Rica, adolescent childbearing has become more prevalent in recent years. Each year, many more young women between the ages of 15-19 years are becoming pregnant. For this poster I observed clinics in Costa Rica and through research I was able to see a trend in the prevalence of pregnancy in their younger population. Socioeconomic status are often directly associated with early motherhood. Factors such as poverty, lack of education, urban residence, and age were predictors of teenage pregnancy. In addition, Costa Rica's significant international immigrant population of Nicaraguans has been linked to the rise of births in Costa Rica. Adolescent pregnancies are often associated with more health risks than pregnancies of older women. One of the risks that is associated with adolescent pregnancies is death. The risk of dying from pregnancy-related causes is doubled for women at the age of 15-19 years when compared older women. Early motherhood also affects young women socially, as they are unable to receive proper education or professional work training. In this presentation, I will delve more into the causes of the rise of adolescent pregnancy and problems young mothers face in Costa Rica.

POSTER: NRS-05

Pre-Eclampsia: A Critical View

Mary Jane Olsen | Joann Ali | Michele Mallette | Sylwia Kaczynska
Faculty Mentor: Professor Regina Gonzalez- Lama | Department of Nursing

Pre-eclampsia and its complications affect maternal health and fetal outcomes in 2-8% of pregnancies worldwide. The diagnosis criteria and treatment plans for the care of patients who suffer from pre-eclampsia will be explained. Identifying risk factors, and understanding pathophysiological changes that occur in the mother during preeclampsia, help to avoid potential complications to both the mother and the fetus. Maternal complication of pre-eclampsia, if left untreated lead to: the possible progression to Eclampsia, a condition where the mother suffers from seizures, to HELLP syndrome, where her laboratory values are compromised and finally to Disseminated Intravascular Coagulation which can result in death. Possible fetal complications include: fetal growth restriction, placental abruption, prematurity and possibly death. The treatment of pre-eclampsia is two fold. We aim to delay the delivery of the infant as long as possible while also preventing the deterioration of the mother's status. Treatment includes: the injection of steroids, to help mature the fetal lungs, the administration of Magnesium Sulfate to prevent seizures, as well as the administration of Calcium channel blockers. Mothers remain at risk for pre-eclampsia for up to six weeks after the delivery of the infant, and women who have been diagnosed as pre-eclamptic during their pregnancy need to be followed up closely during the immediate postpartum period. Nursing care interventions include monitoring: intakes and outputs, oxygenation levels and reflexes are important and maintaining: anti-embolitic therapy and seizure precautions. The signs and symptoms of Magnesium toxicity and worsening pre-eclampsia are a part of the critical thinking skills nurses need to familiarize themselves with and they will be displayed. Information will be presented in both picture and slide format.

POSTER: NRS-06

Post Intensive Care Syndrome

Lilian Bustillo-Chavez | Sylwester Zawada | Comfort Majekodunmi | Ismael Dasalla | Stephanie Rizzo
Faculty Mentor: Professor Regina Gonzalez-Lama | Department of Nursing

In recent years, there has been an increase in the number of patients that have been successfully discharged from critical care areas. However, this patient population often experiences complications from treatment and interventions that they receive being in areas such as the intensive care unit (ICU). Patients in intensive care units are vulnerable to adverse physical, mental, emotional, and psychological effects. These adverse effects could potentiate the development of a condition known as post intensive care syndrome (PICS). The symptoms of PICS are similar to that of anxiety disorders such as post-traumatic stress disorder (PTSD). This is only one of many complications that lead to a decrease in the quality of life of patients who experience PICS. Properly educating health care providers in identifying PICS and its causes is essential to critical care nurses and their practice. Education can help to reduce its incidence, and its impact on the quality of life of patients and family members. PICS is a multidimensional phenomenon requiring an inter-professional team. It is, thereby, important that all healthcare professionals are well-versed in preventing, monitoring, and treating this complication.

POSTER: NRS-07

Study Abroad and Global Learning: Medical Tourism in Costa Rica

Daisy Caceres
Faculty Mentor: Professor Regina Gonzalez-Lama | Department of Nursing

Upon our stay in San Jose, Costa Rica global learning was met through real life experiences and observation throughout clinicals. One of the many revelations from being able to learn in Costa Rica emerged during a cosmetic surgical procedure performed in the Universidad de Iberoamerica. Medical tourism in Costa Rica is a reality and there are different reasons why a person would travel abroad for medical/aesthetic procedures. One of the reasons includes differences in cost of procedures compared to the United States. Nurses may encounter patients who have been abroad for procedures or others who seek the service.

I observed a female patient, most likely in her mid to late forties, getting a facelift procedure done and it occurred to me that many people were coming from other parts of the world to Costa Rica for a procedure like this. Costa Rica happens to be a relatively safe place to get procedures done when you consider the level of education medical professionals have, socialized medicine, and healthcare.

Upon reading the articles Medical tourism: a nurse Executive's need to know (Plonien and Baldwin, 2014) and Do You Know the Way to San José? Medical Tourism in Costa Rica (Warf, 2010) it was found that medical tourism could be attributed to rising health care costs in the U.S., as much as 8% annually. The population under research were American citizens who were uninsured or underinsured and traveling abroad to obtain better costs for medical services in Costa Rica (Warf, 2010). Findings showed that medical tourism has expanded beyond cosmetic procedures. Tourists now arrive in the city of San Jose looking for life-saving procedures such as coronary artery bypass surgery (CABG) due to savings as high as 60% (Ward, 2010).

This experience and research articles helped me become more aware about what people have to face due to unaffordable medical costs in the U.S.. Nurses must be informed about medical tourism, as patients need to be provided with education on which countries to go to. Patients also need to be informed about the legal risks involved. Increasing nursing knowledge about medical tourism is a service to all patients, equipping nurses with arms to empower those who seek to improve their health status and wellness.

POSTER: NRS-08

The Importance of Primary Care Nursing in Costa Rica's EBAIS

William Chen
Faculty Mentor: Professor Regina Gonzalez-Lama | Department of Nursing

The fundamentals of nursing are the base and foundation of nursing practice. On my first week in Costa Rica's transcultural nursing and global health study abroad program, we visited the EBIAS clinics and followed the ATAPs technicians. The EBAIS are government funded out-patient clinics located in rural areas of Costa Rica. The ATAPs are defined as primary health care technicians that provide home visits around the EBAIS. Innovative strategies in promoting global learning during my time in Costa Rica involves observation and my current knowledge of nursing in the United States. Lessons learned from Costa Rica included the significance of primary care education, and the importance of the fundamentals of nursing. The nurses at the EBAIS and the technicians by the ATAPS all have a strong foundation with the fundamentals of nursing and was extremely knowledgeable with every patient they interacted with. They hold strong bedside manners and would have patients properly acquainted before continuing with their check-up. When providing education, they would use common terminology that is understandable to patients. The health care system in Costa Rica focuses heavily on primary care prevention and disease prevention rather than treatments of preexisting conditions. As a health care professional in the United States, we take for granted the luxury of using technology. Blood pressure machines and IV infusion pumps are non-existent in the EBIAS. Therefore, blood pressures are taken manually and IV infusion drip rates are counted. We are also spoiled by having advanced medical supplies such as safety needle caps and pre-filled medications. Nurses in the EBAIS must either recap needles using the scoop technique or use tongs to remove the needles from the syringe. Medications, such as antibiotics and vaccinations, are all manually prepared through ampules minutes before administration to the patient. My clinical experience of the EBAIS and the home visits with the ATAPs gave me a new prospective of the nursing practice. This reinforced my knowledge and the significance of providing primary care education to patients. I will continue to improve my fundamental skills and be grateful for the medical resources and technology my country provides.

POSTER: NRS-09

End Of Life Care in The ICU

Howard Ray | Carmen Franchesca-Jimenez | Keron Alendry | Naomi Attuquayefio | Adjoankoa Nyameh
Faculty Mentor: Professor Regina Gonzalez-Lama | Department of Nursing

Traumatic brain injury remains a challenging and complicated disease process to care for, despite the advancement of technology utilized in monitoring and guiding treatment. The effects of traumatic brain injuries and the decisions of end of life care in the young population between ages 16 to 25 years old will be presented. Families need to make informed decisions about end of life care for their loved one. The concept of dignity and ethical issues for patients dying in the ICU need to be addressed. When the prognosis of critical illness defies treatment, then the goals of care can no longer be met, or when life support is likely to result in outcomes that are incongruent with recovery. The options available for families experiencing those decisions are discussed in an ICU setting. Mechanical ventilation is the most common life-support measure that is withdrawn. However, even in the case of mechanical ventilation, legal or faith-based requirements, societal norms, and physician preferences can influence decisions about withdrawal. The goal of end-of-life care is to control pain and other symptoms so the patient can be as comfortable as possible. End-of-life care may include palliative care, supportive care, and hospice care. Healthcare team play a key role in mitigating the stress of family members by discussing what is likely to happen during the dying process such as unusual sounds, changes in skin color, and agonal breathing. The expected outcomes of families of ICU patients need to be managed with realistically.

POSTER: NRS-10

The Affect of Public Stigma on Mental Health

Alex Reems (The Verrazano School)
Faculty Mentor: Professor Regina Gonzalez-Lama | Department of Nursing

Mental Illness affects 1 in 5 adults every year in the United States. Mental Illness includes mood disorders, major depression, dysthymic disorder, and bipolar disorder. Not only do those faced with mental illness have to deal with the symptoms and disabilities from the disease, but also the stereotypes and misconceptions about mental illness. This paper focuses on the stigma against those who suffer from bipolar disorder. The purpose of this paper is to bring forth education and awareness about bipolar disorder. In this paper bipolar disorder will be defined, along with symptoms and management of the disease. This paper will then explain how those who suffer from this disorder are stigmatized and the effect it has on their day-to-day life. The goal of this paper is to educate the public on ways to decrease the stigma and provide guidance to those who lack knowledge on how to act around those who suffer from bipolar.

POSTER: NRS-11

Learning About Primary Care Abroad

Muhammad Uppal
Faculty Mentor: Professor Regina Gonzalez-Lama | Department of Nursing

Abolishment of the army freed up money to allow for further advancement of health care in Costa Rica. The health care in Costa Rica, Caja Costarricense de Seguro Social, is universal and funded by the public's income. It consists of three tiers. The primary tier is made up of the community clinics. Secondary and tertiary tiers consist of hospitalizations and more complex diagnostic procedures. The large investment in the primary tier lowers the number of patients that would eventually need higher cost care. The community clinics called the EBIAS are the heart of the primary care in Costa Rica and can provide up to 80% of health care needs (Pesec, 2017). They consist of nurses, physicians, psychologists, social workers, and dentists all in one building. The EBIAS's nurses also can implement IV therapy, respiratory therapy, and wound care. The large investment in primary care lowers the number of patients that would otherwise need hospital visits. To be able to deliver all this care in one building is far more efficient than making additional appointments and getting referrals as often occurs in the United States. Visiting Costa Rica and being immersed in the culture was a necessary step to learn about their healthcare. The partnership with UNIBE, the host university, allowed for access in to the EBIAS. Going out with the Atab in San Jose, who are part of the EBIAS staff, physically showed the extent to which they implement primary care. Their job consists of visiting members of the community and doing a home, environment, and vaccination assessments. Being able to go door to door revealed various socioeconomic levels. There were many instances where multiple families lived in one small home. These living conditions can be a breeding ground for communicable diseases. The work of the Atab is critical in these situations and vaccines administration is necessary especially in the lower socioeconomic areas. Reading a textbook or taking a class on global health has its limitations. The partnership with UNIBE allowed for an immersive first-hand experience of Costa Rica's primary care system.

POSTER: NRS-12

Improving Hospice Care

Nicole Yohrling (The Verrazano School)
Faculty Mentor: Professor Regina Gonzalez-Lama | Department of Nursing

Hospice care is comfort care during a person's end of life. Due to the growing aging population, hospice care has become a topic that needs further evaluation and discussion. This study will discuss ways to further improve hospice care. Current and potential barriers will be discussed to show the need for change in this particular area of the healthcare field. The research found that proper training, accreditation, staffing, environment, and collaboration are all needed to improve the quality of hospice care.

PERFORMING AND CREATIVE ARTS

CONFERENCE LOCATION:
RECITAL HALL

POSTER: PCA-01

Weltschmerz

Maria Zakharycheva (Macaulay Honors College)
Faculty Mentor: Professor David Keberle | Department of Performing and Creative Arts

Weltschmerz is an original composition consisting of modified pre-recorded audio, electronic sounds and live, electronically augmented voice. The title, based on a German word, literally meaning "world-pain," was introduced and used by various Romantic-era authors. The word denotes a world view as well as specific feelings and moods. It is described by Frederick C. Beiser as "a mood of weariness or sadness about life arising from the acute awareness of evil and suffering." This description resonates with my idea behind the composition and me personally, due to its multifaceted meaning. In my composition, I tried to impart the pessimistic mood of awareness of people's suffering, while throwing in a dash of (to quote Dr. David Keberle) "hallucinatory religious fervor."

PHYSICAL THERAPY

CONFERENCE LOCATION:
2ND FLOOR–WEST LOUNGE

Note: Undergraduate Research students have been mentored by faculty in Physical Therapy. The department does not offer an undergraduate major.

POSTER: PHT-01

Bone Porosity Detection and Segmentation

Yann-Axel Bertrand
Faculty Mentor: Professor Jean-Philippe Berteau | Department of Physical Therapy

Implementation of a tool to automatically detect and segment different bone porosity areas on a medical image.

Each disparity inside bones, such as condyles, can explain a porosity factor inside the body. A manual tool already exists in order to create different 2D masks of bone porosities at different depths. Thanks to these different masks, it is possible to create a 3D representation of all the different kinds of porosity. Since the masks are not perfect and there are discontinuities between them, the main goal here is to provide a better 3D modeling of each porosity by regularizing the masks from their discontinuities. If the 3D modeling is closer than the reality, we could manage to provide simulations such as blood flow.

However, there is an average rate of 10% of error between the different users when they need to select and validate the Calcified Cartilage (CC) area. Therefore, we also want to avoid the maximum of time spent by the user in the selection process by using, if it's possible, a comparison between an ill bone and a healthy one. We will determine exactly if we need deterministic tools or statistical ones like deep learning.

Thanks to this program, one could explain efficiently osteoarthritis. Thus, this work could be integrated into a bigger diagnostic tool of porosity sources in clinical structures.

POSTER: PHT-02

Genetic Control of Mineralization : a Mathematical Approach

Steve Falcoz
Faculty Mentor: Professor Jean-Philippe Berteau | Department of Physical Therapy

Bone is an engineering marvel that achieves a unique combination of stiffness and toughness exceeding that of synthesized materials. Recent evidence suggests that the relationship between inter-molecular connections that involve the two main bone building blocks, TropoCollagen molecules (TC) and carbonated Hydroxyapatite (cAp), and bone macroscopic mechanical properties, stiffness, and toughness, are keys to understanding bone mechanical behavior. The goal of our study is to establish how inter-molecular connections that occur during bone mineralization are related to macroscopic mechanical properties in childrens' bones. Our hypothesis is to link the biological alterations of the TC-cAp self-assembly process happening during bone mineralization to the bone macroscopic mechanical properties alterations appearing across aging. To do so, we have developed a multiscale mathematical model that includes collagen cross-links (TC-TC interface) and cAp density from experimental studies of bone samples across aging to forecast bone macroscopic mechanical properties. When solving our system, we observed a change in the slope similar to what is experimentally observed at the yield point (limit between stiffness and toughness) and we show a relationship that challenges the interpolation currently used for children bone modeling.

POSTER: PHT-03

Atomic Force Microscopy and Histological Image Analysis of Subchondral Bone during Osteoarthritis Pathological Process

Lisa Manitta (Macaulay Honors College)
Faculty Mentor: Professor Jean-Philippe Berteau | Department of Physical Therapy

This research project is in the field of biomedics, focusing on the disease of osteoarthritis. Osteoarthritis is a disease that affects millions of Americans and for which there is currently no cure. Osteoarthritis is characterized by the loss of joint cartilage as well as changes to the subchondral bone. The goal of this project is to gain an understanding of the prognosis and mechanical properties of osteoarthritis through the examination of the subchondral bone femur of mice. A biomarker is currently needed for osteoarthritis in order to make earlier detection possible, and this project hopes to use the subchondral bone as a biomarker. The hypothesis of this project is that the Elastic Modulus, or hardness, will increase in the presence of osteoarthritis. This hypothesis will be tested by performing nanoindentation experiments on wild type as well as osteoarthritic murine subchondral bone femur using the atomic force microscope. The data collected from the nanoindentation experiments will be used to calculate the Elastic Modulus, or hardness, of the bone. Histological image analysis will also be performed on murine knee joints of osteoarthritic mice as well as wild type. The hypothesis is that the thickness of articular cartilage will decrease in the presence of OA while the subchondral plate will become thicker. To test this hypothesis, the OARSI grading system will be used to quantify joint degradation in both wild type and osteoarthritic murine knee samples.

POSTER: PHT-04

Changing Hand Dominance of Mice through Electrical Stimulation

Adnan Elcharfa (CUNY Research Scholars Program) **| Baraa Abdelrahmen | Alexis Gorin**
Faculty Mentor: Professor Zaghloul Ahmed | Department of Physical Therapy

Handedness is a strong preference to use either the right or the left hand when performing skilled manual actions. In recent studies, MRI-based methodology has linked this ability to underlying functional and structural motor control. TDCS is a well-known clinical neuromodulation technique which has proved to be of growing interest for applications in neurorehabilitation. The aim of the current study is to examine the effect of applying subthreshold transcranial direct current (TDCS) on one hemisphere on handedness in mice. In the experiment, the animal is placed in a pyrex cylinder and filmed when rearing to explore the environment. The instances in which the mouse uses each paw to touch the cylinder will be assessed to determine handedness. Following this analysis, the mouse will then be administered a transcranial direct current stimulation (TDCS) of either anodal or cathodal current. The results will show whether the use of TDCS can elicit changes in neural connectivity that will change handedness.

PHYSICS AND ASTRONOMY

CONFERENCE LOCATION:
2ND FLOOR–WEST LOUNGE

POSTER: PHY/AST-01

Exploring AGN Unification Theory with the LOFAR Two-Metre Sky Survey

Gaia Fabj (The Verrazano School)
Faculty Mentor: Professor Charles Liu | Department of Physics and Astronomy

Active Galactic Nuclei (AGN) are believed to be a result of accretion of matter by a supermassive black hole (SMBH) at the center of its host galaxy. AGN Unification theory predicts that type 1 AGNs (quasars, QSO) and type 2 AGNs (radio galaxies, RG) can be unified as a single class based on the fact that they have the same intrinsic sizes. This would result in different observed projected linear sizes, being that these objects are oriented along different viewing angles. The goal of this project was to test the AGN unification theory by looking at the projected linear sizes of a selected sample of radio sources using a low frequency survey provided by the Low-Frequency Array (LOFAR), the LOFAR Two-metre Sky Survey (LoTSS). To test the theory, we looked at QSO and RG cumulative distribution functions (CDF) and at their size ratios as a function of low-frequency radio luminosity (151 MHz) and redshift.

POSTER: PHY/AST-02

Heat Conduction Versus Thermal Radiation of Halo Gas

Jerry Ortiz
Faculty Mentor: Professor Charles Liu | Department of Physics and Astronomy

For a warm gas cloud within hot halo gas, the internal energy of the warm gas cloud will be regulated by two primary processes: energy gained through thermal conduction with the surrounding gas, and energy lost due to thermal radiation; conduction between a cloud and the surrounding medium is not modeled in simulations, so the goal of this project is to determine the importance of conduction in regulating the cloud's structure. The warm cloud is assumed to have a temperature of 1.5*10^4 K (15,000 Kelvin) at its center. We tested a model with a spherical cloud, and a temperature of 10^6 K (1,000,000 Kelvin) at the edge of the medium. For this scenario, the temperature, thermal conductivity, heat conduction, and thermal radiation will be calculated. Comparing the heat conduction with the thermal radiation will indicate which conditions are required for the warm gas cloud to heat up and eventually dissolve. Understanding this interaction will inform observations of distant galaxies, as well as details about the interaction between warm gas and the surrounding hot gas.

POLITICAL SCIENCE AND GLOBAL AFFAIRS

CONFERENCE LOCATION:
2ND FLOOR–EAST LOUNGE

POSTER: PSGA-01

Inconsistencies in United States Foreign Policy Towards the Middle East

Haneen Hegazi (The Verrazano School)
Faculty Mentor: Professor Halil Ege Ozen | Department of Political Science and Global Affairs

In this research paper, I have analyzed American foreign policy and how it has changed over time. Therefore, I used the Middle East as a case study of how these changes in foreign policy have effected power relations and stability in the region. I have also looked at how the United States' administration made decisions regarding their foreign policy strategy in the region. Specifically, what determined the variation in U.S. administrations' relations to individual countries in the region, like Syria and Libya.

My findings included the following, President Barack Obama presented the United States with policies that were not consistent with his promises throughout his campaign. Specifically, Libya and Syria provided great examples of how the United States promotes democracy and human rights, as a global hegemon, but did not deliver on their promises in these two cases. In Libya, it was clear that the United States aided in the overthrowing of a dictator that was infringing on the citizen's rights but failed to rebuild the nation and the country fell into a crisis. This displayed the United States' failure to supply the nation with what they demanded and needed at the time, which was stability and security. In Syria, the United States took a strategic step back because the United States realized the civil war was going to be a detrimental war on the nation and on the world, despite the humanitarian crisis that was going on and their need to advocate for democracy and human rights. This is one impressionistic research in which I have come up with answers regarding the inconsistencies. With this being said, the reasons for the inconsistencies are based on the circumstances that the U.S was put in and how to best maintain their goal of balancing power among nations. Understanding and analyzing fluctuations and volatilities in the U.S. foreign policy will help policy-makers in the future to avoid them and have a consistent foreign policy approach, which may help restore stability in the region.

POSTER: PSGA-02

Understanding MENA's Traditions

Yasmine Hussein
Faculty Mentor: Professor Halil Ege Ozen | Department of Political Science and Global Affairs

The Middle East and North Africa is a very intriguing and complex region to truly understand. One way to understand and analyze this region is to interpret the traditions of this region. The traditions of individual states within the region affect politics both domestically and regionally. In this project, the main focus is on how to analyze and understand this region through its 'traditions'. As well, the main focus was based on cultural and religious views. It's important to know this because of the already negative bias that exists from the region. Instead of trying to judge or fix the region, first, there needs to be an understanding of why the region is the way it is. The main case studies that were focused on within the project were Egypt vs Tunisia with the outcome of the Arab Uprisings and Iran vs Saudi Arabia with their religious differences. Although a majority of the region is considered Arab and religiously follow Islam, there are other ethnic and religious groups. Each group has its own set of norms and beliefs which effects the outcome of politics within each state. The traditions have a role in how policies are implemented and carried out within the region. What was found in the research is that traditions are so deeply rooted and influence regional politics. A reason as to why MENA would never unite is because of these traditions. In trying to understand one's traditions, a person may be ethnocentric, judging another culture by the standards of their own. In a sense, issues that occur within the MENA region, the Western world may not always agree with and judge based on their own views. Samuel Huntington's Clash of Civilizations gives off the impression of a world of

cultural strife. Instead of trying to fix and alter cultural beliefs we need to understand and accept that others have different perceptions. The core of this research project is to understand and analyze the traditions of this region without the negative backlash this region is perceived to be. This region especially has deep core ties with its traditional values, that it has become embedded within the politics of these states. There is a reason as to why authoritarianism is still prevalent among these states, it's because of the basic core values that preexisted.

POSTER: PSGA-03

What's Next: Understanding Brexit as a Nationalist Movement

Richard Valiente (The Verrazano School)
Faculty Mentor: Professor Halil Ege Ozen | Department of Political Science and Global Affairs

The 2016 United Kingdom European Union membership referendum, or Brexit referendum as it has come to be known is a very complicated phenomenon as well as an unexpected outcome for many at both domestic and international levels. Understanding why the Brexit vote was successful is critical to a perceptive view of what is to come as a result of it. Brexit can be seen as a result of a nationalist movement throughout the U.K for several reasons. Some scholars in the field have suggested economic disparity and income stagnation as the main influencer, while others have pointed to social tensions such as education and immigration policy. Independently, these issues are not sufficient to justify Brexit as a nationalist movement. However, when paired with the rising influence of populism throughout Europe it is found that these issues proposed by many scholars manifest themselves along more nationalistic views. Therefore, the question this study will answer is whether the rise of populism throughout Western Europe fueled a nationalist movement in the United Kingdom? Therefore, the main purpose of this research paper is to explore the relationship between several economic and social tensions that predate the Brexit Referendum and revisit them through a populist understanding which has manifested itself into a nationalistic view for many British voters.

POSTER: PSGA-04

Investigating Global Declines in Press Freedom

Amanda Tukaj (The Verrazano School)
Faculty Mentor: Professor James Falkin | Department of Political Science and Global Affairs

Threats to press freedom are occurring in all regions of the globe, though they may present themselves in different ways. Press freedom is multi-faceted, and it is not sacrosanct or immutable within democracies. While autocratic and authoritarian regimes may present more overt or immediately discernible threats to the state's media outlets, press freedom remains a global issue which affects all regimes. This report identifies the various laws, policies, and regulations that have infringed upon the rights of journalists in the last decade, specifically within the United Kingdom, Malta, and Turkey. This includes issues of national security in the UK, corruption and libel suits in Malta, and outright suppression of the press and the imprisonment of journalists in Turkey. Within a Western context, the press as an institution is often regarded as an essential component of building and maintaining a healthy democracy within a state. Journalists are assigned the role of watchdog and are expected to provide the public with information pertaining to the state's activities in an independent and objective albeit oftentimes critical manner. Investigations and reporting conducted according to widely-accepted journalistic standards must remain free of government influence, obstruction, or interference. The existence of this fourth estate intends to promote the exchange of ideas and a forum through which discourse and debate can take place. Therefore, noting trends that may be jeopardizing or obstructing the freedom of journalists is critical to maintaining an open forum.

POSTER: PSGA-05

Cocaine Trafficking in Latin America

Joshua Santana | Nicholas Shagiri | Jared Brecher
Faculty Mentor: Professor Jane Marcus Delgado | Department of Political Science and Global Affairs

This research project will be covering drug trafficking, specifically cocaine trafficking in Latin America. The question that will be developed is, how does drug trafficking in Latin America affect other countries and has drug trafficking in Latin America worsened over time? This project will talk about cocaine trafficking and diverse responses to it. It will also explore intersections of drug trafficking and community welfare in the case of Costa Rica, addressing ways in which violence has increased in the community due to the narcotics industry. The evolution of drug trafficking in Latin America will also be discussed and how it characterizes drug trafficking. An additional focus of the research will analyze the economic impact of drug trafficking on the supply end – in Latin America – and in the receiving end, in the United States.

POSTER: PSGA-06

Effect of the AMIA Bombing on Argentine Politics

Guy Bargovsky
Faculty Mentor: Professor Jane Marcus-Delgado | Department of Political Science and Global Affairs

On July 18, 1994, the Asociación Mutual Israelita Argentina (AMIA) Jewish community center in Buenos Aires, Argentina was attacked when a suicide bomber drove a Renault van into the AMIA building. This attack led to eighty-five people being killed and over 300 people wounded as well as causing the building to be completely destroyed. The perpetrators of the crime have not been brought to justice yet but Iran is heavily implicated in the attack. The AMIA bombing also was the largest terror attack Argentina has ever had, causing political consequences that have lasted till the present day.

This research project examines the ways in which the AMIA bombing has affected Argentine politics for the past twenty-five years. I contend that all of the cover-ups of the crime, involving different political actors, have caused serious challenges to Argentina's governance. This is especially significant because of the implication of former President Kircher and her allies in the Justicialist (Peronist) party, which has always been the nation's dominant political force.

POSTER: PSGA-07

The Effect of Corruption and Crime on Latin American Emigration: The Question of Amnesty

Maria Costes | Camilo Aparicio
Faculty Mentor: Professor Jane Marcus-Delgado | Department of Political Science and Global Affairs

A general amnesty is a solution to help twelve million undocumented souls that live in fear day to day. Over the years, the countries of Latin America have suffered from the bad decisions of people who have chosen politicians concerned only for their own welfare, with little regard for that of those who put them in power. Gangs and violence are taking advantage of small countries all over Central America, while Venezuela, Bolivia, and Brazil are becoming hostile countries. Unfortunately, they have leaders who, instead of improving the economies of their countries, are letting their citizens die of hunger.

Due to this fact, many people emigrate to the United States to make this country their home. Many of the people that run away from their countries are living in the United States undocumented, and they cannot go back to their countries because many of them sold everything they had to start the journey to the home of the free. Legal asylum is not the solution to this dilemma. This study argues that a general immigration amnesty would be the perfect temporary solution for many of these innocent souls that are living with fear and an uncertain future because of their immigration status. Undocumented immigrants cannot live in peace because they live in the shadow of fear of being deported back to their native countries.

POSTER: PSGA-08

The Oil Industry in Venezuela

Nicholas Cuellar | Everett Rodriguez | Christina Cerverizzo
Faculty Mentor: Professor Jane Marcus-Delgado | Department of Political Science and Global Affairs

This project will focus on the oil industry in Venezuela and its impact on the country's politics and society. Venezuela has a huge amount of oil – it was actually number one in the world at the beginning of this year. The country's political turmoil could significantly affect the global supply of oil. In recent years, its yield has diminished from 2.4 million barrels per day in 2016 to a 70-year low of around 1.2 million bpd as the nation has slipped into a financial emergency under the Maduro administration. What is in store for Venezuela now that it is apparently unable to supply the oil needed for its desperate economic situation? We argue that the oil industry is contributing to the downfall of the Venezuelan political system. We will take a look at how they will manage this problem, examine with whom Venezuela will be allied, and with whom they will work to purchase their oil.

POSTER: PSGA-09

The Effect of Brazil's Politics on the Amazon Rain Forest

Bousso Diouf | Emily Destefano | Edith Martinez
Faculty Mentor: Professor Jane Marcus-Delgado | Department of Political Science and Global Affairs

This research looks at the many factors that have led to the endangerment of the Amazon rainforest, including deforestation, cattle ranching, soybean production, and laws that are being proposed to make it easier for these destructive practices to be carried out. The Amazon rainforest in Brazil covers much of the country's northwest, as well as parts of Peru and Colombia, for a total of 7 million square kilometers. This study examines the impact of Brazil's new president, Jair Bolsonaro, on the nation's environmental policies, focusing on the rainforest. Since taking office, Bolsonaro has faced a lot of criticism from many people in the indigenous community and from many environmentalists because of the way he plans to use the Amazon rainforest for commercial purposes.

Given the size of the Amazon rainforest, Brazil's environmental policies will affect the entire world population. Even before Bolsonaro's administration, about 7,900 sq km (3,050 sq miles) of the world's largest rainforest was destroyed between August 2017 and July 2018 - an area roughly five times the size of London. There is a clear link between the health of the Amazon and the health of the planet. In all, 30 million people, including 350 indigenous ethnic groups, live in the Amazon basin and depend on it for agriculture, clothing, and traditional medicines, as well as its natural bounty for food, shelter and livelihoods. Bolsonaro's environmental policies are of concern to the global population, as well as to the rainforest's residents whose lives they will directly affect.

POSTER: PSGA-10

The Roots of Venezuela's Political Economic Crisis

Nicholas Dubinsky | Nelson Caraballo | Emely Rodriguez
Faculty Mentor: Professor Jane Marcus-Delgado | Department of Political Science and Global Affairs

In the past, Venezuela was one of the wealthiest countries in Latin America. But it has experienced a major economic downfall in recent years. Many blame Venezuela's economic crisis on its reliance on oil exports as well as on social programs that were being implemented throughout the country, designed to spread wealth throughout the region and close the inequality gap. While Venezuela was able to maintain a stable economy through its reliance on oil exports under President Hugo Chavez, it would become problematic as oil prices began to drop under the Nicolas Maduro administration. As oil prices began to drop so did Venezuela's economic stability. Under pressure, Maduro scrambled for a solution, which prompted him to begin printing out more money, increasing the minimum wage, and capping prices on certain products. These actions made a bad situation worse for the Venezuelan people, as inflation rates began to rise along with increases in food prices that people could no longer afford.

As a result, many Venezuelans are calling for President Maduro to resign and allow for a new leader to step up and try to solve this economic crisis. In this research, we will examine the type of policies that led to this economic crisis, how the Venezuelan people are dealing with the situation, and how President Maduro is able to maintain his power despite large support for his resignation.

POSTER: PSGA-11

The Cochabamba Water War

Akihiro Honda | Elizabeth Perez | Steeve Labonte
Faculty Mentor: Professor Jane Marcus-Delgado | Department of Political Science and Global Affairs

Water is one of the most basic resources needed for a thriving and stable community and economy. According to a current World Bank report, up to 3.5 billion people around the world could face water scarcity by the year 2025. Two decades ago, Bolivians were struggling to gain access to fresh water. Economic instability and hyperinflation caused private companies to retreat from the country. Therefore, the Bolivian government asked the World Bank for assistance in developing the economy. In 1999, the World Bank granted the U.S. company, Bechtel, ownership of water services in Bolivia's third largest city, Cochabamba. A year later, hundreds of thousands of Bolivians protested against the government's decision. As a result, the U.S. company left, and the Bolivian government returned to the truck. This research will at first focus on the political and economic situations during the time of dictatorship and post-dictatorship term in Bolivia. Secondly, we will look at the reason for the economic instability and inflation in the country before the Cochabamba water war. Then this study will see the concrete policy from the World Bank along with the role of it played, because the Bolivian government could not gain economic stability. This research will highlight why the water war came out and what happened during the war. In the end, we will approach how Bolivia's economic and political situations have been affected by its policies in regards to fresh water.

POSTER: PSGA-12

Terrorism as a Challenge to Peruvian Democracy

Matthew Kemper | Kayla Didonato | Brooke Caradonna-Maltese | Andrew Minew
Faculty Mentor: Professor Jane Marcus-Delgado | Department of Political Science and Global Affairs

Peru has alternated between democracy and militarism since the beginning of the 1900's, most recently, for twelve years during the years 1968 to 1980. Leading up to the military rule of 1968, Manuel A. Odría became president, appeasing the oligarchy and using populism to win over the lower classes and the poor. The country's economy began to improve, but at the expense of restricted civil rights and mass corruption, and Peruvians began to worry that Odría's dictatorship would never cease. Fernando Belaúnde Terry ran, but his candidacy was declined, due to the dictatorship promoting a right-wing candidate, Manuel Prado Ugarteche.

Peru continued to fluctuate between military and civilian rule when Prado was accused of fraud, returning the military junta to power. This government was overseen by Ricardo Perez Godoy, who started to lead the country into a transitional government and placed proper elections in 1963, where Belaúnde won with a comfortable margin. Belaúnde was overthrown in 1968 by General Juan Velasco Alvarado. This paper asserts that Peru's constant shifts in regimes have allowed terrorist organizations such as Shining Path to use guerrilla tactics to destabilize the democratic process. A cycle of governance has emerged that continuously allows the armed forces to justify their role in the political system, precluding attempts to institutionalize civilian rule.

POSTER: PSGA-13

Human Trafficking Across the US - Mexico Border

Ahmed Khaled | Luke McNamara | Conor Buckley
Faculty Mentor: Professor Jane Marcus-Delgado | Department of Political Science and Global Affairs

Human trafficking has become a humanitarian crisis which has no borders. It has grown to be a method of modern-day slavery existing worldwide. When taking a closer look into case studies, the Human Trafficking Search states a total of 8,759 cases of human trafficking were reported in 2017. These numbers are especially alarming due to the fact that this is a 13 percent increase from the cases reported in 2016. A growing trend is the victims who are trafficked: they are predominately made up of underage girls and women. This twisted industry has in fact gotten worse because over a thousand businesses were reportedly involved in these operations stemming from charges ranging from kidnapping, drugs and prostitution. As a result of the human trafficking industry's growth, it has become a multi-billion dollar industry existing on and off the dark web.

A solution that President Trump and other officials have proposed to stop human and drug trafficking is building a wall on the United States - Mexico border. President Trump hopes after building a properly secured wall that it will ensure trafficking cases are reduced and will not be tolerated. In Mexico, traffickers are resilient and constantly looking for methods to smuggle both drugs and people in to the United States. This paper will attempt to answer the question: will President Trump's proposed border wall help prevent human trafficking across the US-Mexico border? Our hypothesis is that the wall may reduce the problem of human trafficking, but will not completely alleviate it. Our research will highlight the various methods in which human traffickers operate their enterprise, as well as the current measure in place in both the US and Mexico to combat human traffickers.

POSTER: PSGA-14

How Did Advertising Help Change Chile's Political System?

Oralia Lainez | Nelys Fernier | Layla Gallardo
Faculty Mentor: Professor Jane Marcus-Delgado | Department of Political Science and Global Affairs

This research will show the advertising tactics in Chile's political campaign that influenced whether dictator Augusto Pinochet stayed in office for eight additional years or handed power to a newly elected president. Pinochet's government began in 1973 when the armed forces formed a coup to go against President Salvador Allende, resulting in the authoritarian leader's seizure of the Chilean government. However, in 1988 a referendum was called, in which a public poll would decide whether or not to keep him in power. Each campaign (for and against the regime) was allowed 15 minutes of TV advertising each day. Two groups were created for the movement against Pinochet, in which political parties joined in and created the Democratic Alliance and the Communist-led Democratic Movement. In 1988 Chile's economic crisis had a negative impact on the Pinochet government, and protestors demanded economic relief, resulting in mass mobilization against the dictator. The democratic alliance later transitioned into a more effective way of combating the regime, ultimately turning into a coalition of parties for the "No" vote. This paper examines the ways that the opposition parties created a unified media campaign to defeat Pinochet and return the country to civilian rule.

POSTER: PSGA-15

The Impact of the Venezuelan Crisis in Trinidad & Tobago

Vianna Mark
Faculty Mentor: Professor Jane Marcus-Delgado | Department of Political Science and Global Affairs

The purpose of this paper is to examine the effect of the Venezuelan crisis on Trinidad and Tobago, as the majority of Venezuelans migrate to Trinidad & Tobago. Trinidad and Tobago have had a strong oil economy over the years – it is the largest oil and natural gas producer in the Caribbean. In the past, they have made deals with the Venezuelan state oil company PDVSA and U.S oil company Chevron to develop an offshore natural gas field. Their most recent deal allows Trinidad and Tobago to process Venezuela's natural gas. Which lead me to wonder, how does the Venezuelan crisis impact Trinidad & Tobago? In order to assess the impact, I'm taking into account its effects on the labor market and economy. There is a difference of opinion about what should be done to curb the influx of immigrants, and whether or not it beneficial to the economy by some and a disadvantage by others. This paper attempts to shed some light on various ways that the Venezuelan crisis may have serious consequences in Trinidad and Tobago.

POSTER: PSGA-16

The Effect on Latin American Women of Patrimonial Violence, Femicide and Machismo

Radini Munaweera | Dejon Virgo | Si Ying Ma Liu
Faculty Mentor: Professor Jane Marcus-Delgado | Department of Political Science and Global Affairs

Violence against women has become second nature in Latin America, owing to the machismo in the natural behavior of men, and the long history of dictatorships that turned a blind eye towards all the injustices women had to go through. Countries like Ecuador have major women's rights violations where women are in an unfair or a more vulnerable place than men are under certain laws. Peru on the other hand, had an increase of domestic violence where the government has tried to enforce laws to defend women, but has continuously failed due to flaws in the system. Femicide, the act of killing women merely because of their gender, has been repeatedly reported in many Latin American nations.

In response to these violations, there have been rallies to protest violence against women in Uruguay, Chile, Argentina, Brazil, Paraguay, Peru, Nicaragua etc. Organizations like the UN, various NGOs, and others have been working towards the protection of women's rights in Latin America. Yet, the extremely masculine traditional and cultural mindsets in the region encourage men to treat women as inferior to them. Strong female idols like Eva Peron and Rigoberta Menchu (from Guatemala) have risen up in the same soil that this violence takes place. But it is extremely difficult to survive a graceful and successful journey as an average Latin American woman who continuously faces these inequalities and injustices.

POSTER: PSGA-17

The Oil Crisis in Ecuador

Miguel Pabon
Faculty Mentor: Professor Jane Marcus-Delgado | Department of Political Science and Global Affairs

One of the most valuable features of Ecuador's economy is oil, which accounts for 40% of the export economy. It is one of the largest suppliers of oil to the United States. The oil industry has suffered many bumps and bruises due to environmental disasters. For example, in 1987 a strong earthquake shook Ecuador that destroyed an important pipeline used for oil transport SOTE (Sistema Oleoducto Trans-Ecuatoriano). Due to this dangerous weather event the oil industry became dependent on only one pipeline. Another weather event that impacted Ecuador was El Nino Southern Oscillation (ENSO). Ecuador went through a series of heavy floods, high winds and torrential downpours where the pipeline SOTE got damaged, resulting in almost 12.4 million families living in poverty, and causing 2.65 billion dollars worth of damages. This study links Ecuador's chronic political instability to its volatile oil industry. It addresses the ways that natural disasters contribute to its political economic problems.

POSTER: PSGA-18

What Steps are the Mexican Authorities Taking to Address the Problem of Femicide in Juarez?

Adrian Tapia | Evelyn Salazar | Carolina Puertas
Faculty Mentor: Professor Jane Marcus-Delgado | Department of Political Science and Global Affairs

In this research, we will be looking at how effective legislative action is against the prevention of femicide, the killing of women, in the city of Juarez, Mexico, as well as how the term "Feminicidio" or Femicide, emerged to describe the crisis. In Juarez there were a large number of brutal and merciless killings and disappearances of hundreds of women throughout the 1990's. Furthermore, we demonstrate how society reacted to the femicide, in the form of either protests or media attention, as well as showing how legislation was passed in order to prevent the deaths and disappearances of more women.

This research clearly shows how the legislative action in the city of Juarez, Mexico did little, or almost nothing, to prevent the brutal killings and disappearances of women. It proves that, even after legislative action, law enforcement would not be effective in preventing these crimes.

POSTER: PSGA-19

Festivalisation: Images and Realities of the 2010 FIFA World Cup in South Africa

Brianna Di Stefano (The Verrazano School)
Faculty Mentor: Professor Peter Kabachnik | Department of Political Science and Global Affairs

Sport mega-events, such as the FIFA World Cup, undoubtedly bring an increased amount of entertainment, excitement and attention to each nation that hosts the event. Potential host countries must propose a bid to host the FIFA World Cup several years in advance. Mega events such as the World Cup are believed to bring positive change and development, economically and socially, to the host country. Although at first glance the potential benefits of hosting the World Cup may seem unquestionable, with further analysis it is evident that in reality the potential rewards may be unattainable. Learning about the positive and negative effects of these major events on the host nation is essential to learning why numerous nations continue to bid to host these events. Using the 2010 FIFA World Cup in South Africa to analyze if the effects of a major event have successfully advanced a host nation such as South Africa is informative because South Africa is a developing

country seeking economic investments, improved infrastructure and to reinvent their global image. Host countries use the concept of festivalisation as a catalyst for urban, economic and social growth through the hosting of a major cultural or sports event. Festivalisation encompasses all of these aspects that South Africa hoped to gain through hosting the World Cup. With the concept of festivalisation in mind, I have analyzed the image and realities of the 2010 FIFA World Cup. By focusing on the image desired by the government of South Africa, the image imagined by the local residents, and image depicted by media representation and comparing those to the realities and actual effects of the World Cup gives insight to the advantages and disadvantages of hosting a mega event. In addition, using facts from other World Cups or the Olympics are important in showing how other countries were effected by hosting a mega event, which leads to future host countries being able to learn from the previous events. Learning the true effects of hosting a mega event is pivotal for countries who are in need of development because they may rely on festivalisation to initiate progressive changes in their country without thoroughly analyzing if mega events are successful as a means of activating development.

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PSYCHOLOGY

CONFERENCE LOCATION:
1ST FLOOR–CENTER

POSTER: PSY-01

What is Theory of Mind? Do Dogs Have the Capacity for Theory of Mind?

Adelina Davi
Faculty Mentor: Professor Bertram Ploog | Department of Psychology

Previous research conducted in Theory of Mind (ToM), where an "individual imputes mental states to himself and others" (Premack & Woodruff, 1978), has been focused on animals and children. Originally, research has investigated ToM in non-human primates, such as chimpanzees and gorillas, but recently canine studies have shown paradigms with domestic dogs to be preferred, since they are social animals and are raised with humans, therefore having the most human interaction (Cooper, 2003). Also, it has been shown that dogs have attention-to-attentive states with conspecifics in knower-guesser studies and perspective-taking designs. These capacities make using dogs for experimental studies in ToM easier for researchers to work with. In order to determine whether an individual has ToM, one must demonstrate that one individual can attribute beliefs or desires of another and act accordingly. However, while many ToM studies claiming ToM have proposed some cognitive or mentalistic explanations, there has been criticism of this approach, namely by associative learning theorists who argue that ToM can be explained by associative theories. This raises the question on what exactly is required to have or demonstrate ToM? This paper investigates why associative learning should be considered a determinant of ToM, and also why domestic dogs are good candidates to study ToM.

POSTER: PSY-02

Assessing Emotion Recognition in Children with ASD Using a Matching-to-Sample Paradigm Presented on an iPad®

Kiran Imtiaz | Nataliya Pinyuk
Faculty Mentor: Professor Bertram Ploog | Department of Psychology

The proposed study uses a behavior-analytical approach, more specifically a matching-to-sample paradigm, to evaluate emotion recognition in children with autism by employing a mobile-game device. The purpose of this research is to assess any emotion recognition deficits in individuals with autism when compared to typically developing individuals across the same age. The results of this work will also make it possible to provide remediation if such a deficit is found. In the game, one sample stimulus with multiple features will be presented (e.g. the top and bottom part of a photo of a face.) Then four comparison stimuli will be presented that are the result of rearranging the features (e.g. splicing the bottom part of a second photo with the top part of the first photo.) Selecting a correct match (sample and one of the comparison stimuli are identical) result in a small reward (e.g. 10-s access to a simple video game or a funny video clip). If, for example, the participant responds consistently to the top part regardless of the bottom part (i.e., makes correct and incorrect choices), we can conclude that the participant attended mainly to the top part and not to the bottom part. As stimuli, we will use drawings, emoji faces, face and non-face photos, and geometric shapes. We expect the results to tell us whether participants with autism differ in the way that they attend to certain features of a face or non-face stimulus compared with participants who do not have a diagnosis of autism.

POSTER: PSY-03

Support for RxP is Impacted by Professional Identity, Geographical Location, and Type of Medical Doctor

Isabel Pisakhova
Faculty Mentor: Professor Daniel Kaplin | Department of Psychology

With the co-occurring rise in mental health concerns and a decline in psychiatrists in the field, there is a need for the development of more prescribing. There remains tension over of whether appropriately trained psychologists should be able to prescribe psychotropic medications across the medical community. Presently, psychologists have the capability to prescribe in five states. Therefore, in this study, I examine the impact of professional identity, intra-medical doctor differences, presentation of information, and geographic location on attitudes relative support for prescriptive authority. In my study, 331 participants were gathered from medical conferences and through online surveys sent through email. All participants completed Kaplin and colleagues' (2016) short form 15-item survey instrument and a demographics questionnaire. Participants were randomly assigned to either receive an educational fact sheet or complete the survey without the fact sheet. Using a one-way ANOVA, we found that psychologists showed significantly greater support than between medical doctors, nurse practitioners, and physician assistants, $F(3, 320) = 39.544$, $p < .001$. An independent sample t-test revealed greater support in total mean scores between non-psychiatrists than psychiatrists, $t(75) = -4.07$, $p < .001$. Non-significant differences were found between attitudes and the presentation of an educational fact sheet [$t(324) = 1.55$, $p = .519$]. Lastly, a one way between subjects' ANOVA displayed significant findings between total mean scores and geographical location, $F(2, 319) = 4.746$, $p = .009$. More specifically, medical professionals that practice in rural communities showed greater support than those that practice in urban and suburban regions. These results suggest that support for prescriptive authority is strongly impacted by professional identity. However, consistent with persuasion theory, when personally impacted by a decision, respondents are more likely to align themselves with what is in their best interest over the merits of a position.

POSTER: PSY-04

GLUT4 in the Adaptive Metabolism of the African Naked Mole-Rat Species

Corey Plate
Faculty Mentor: Professor Daniel McCloskey | Department of Psychology

African naked mole-rats are a burrowing rodent species that spend their lives in underground colonies. This lifestyle constantly exposes them to high levels of carbon dioxide, and low levels of oxygen. Far from being encumbered by these environmental pressures, behavioral analysis suggests that they strongly prefer it. When exposed to normoxic, normocapnic air, naked mole-rats will undergo spontaneous, epileptic-like, seizures at temperatures endemic to their native ecosphere. Other seemingly anomalous traits of this species include abnormally low blood sugar, insulin resistance, slow metabolism and heart rate, poikilothermia, low cancer rate, longevity that is apogee amongst rodents, and eusocial behavior --the first such mammalian species to ever have behavior described as such. In this project, we seek to underscore a mechanism which can tie together these seemingly disparate qualities, and explain how dispersers of the species transmute these qualities to become suited for their above ground role. We hypothesize that the naked mole-rat transcribes less of the insulin-dependent glucose transporter GLUT4 than their close phylogenetic relatives, as a function of not relying as heavily on oxidative phosphorylation. This most immediately explains why naked mole-rats are naturally insulin resistant, and why they do not seem to maintain expected blood glucose levels. It explains the need for a slow metabolism, poikilothermy, and a slow heart rate. It explains, by virtue of lower oxidative stress and slower cell replacement, longevity and a low cancer

rate. We suggest that dispersers undergo physiological changes which cause them to switch predominately to oxidative phosphorylation, explaining their drive and ability to leave the colony. ELISA data had given preliminary evidence that naked mole-rats have less hippocampal GLUT4, on average, than do mice, but this was not supported by Western blot. We are now conducting GLUT4 Western blots on cardiac muscle tissue after further analysis revealed that the level of hippocampal GLUT4 may be poorly correlated with that of muscle and fat tissue. If confirmed, we can compare these lower levels to those of the disperser morph, which, we hypothesize, have more vesicular GLUT4, on average, than those of nondisperser morphs.

POSTER: PSY-05

Arduino-Based Monitoring of the Naked Mole-Rat Nest Environment

Gianna Cirrone (Macaulay Honors College)
Faculty Mentor: Professor Daniel McCloskey | Department of Psychology

The naked mole-rat (NM-R) is a unique animal that can tolerate extremely high levels of carbon dioxide (CO2) that would cause most other mammals to pass out or even die. The nest chamber, which is where the majority of the animals spend most of their time and exhibit huddling behavior, has the highest level of CO2 in the entire colony. The present study uses Arduino-based technology to monitor the NM-R environment in order to determine the relationship between the number of animals in the nest and the CO2 level of the nest. A computer model generated using Vensim software demonstrated that the CO2 level increases rapidly and then reaches a saturation point and plateaus, suggesting there is a level that becomes too high for the NM-Rs which deters more from entering the nest or affects their behavior. We tested if this relationship would match that of the computer model by using an Arduino uno board with a CO2 sensor attachment and placed it in the nest of the colony. We found that the graph of our data did not match the computer model and instead showed a more direct relationship and then a bifurcation in the data. This finding has important implications as it suggests that the sociality of the NM-Rs supersedes energy conservation and that the huddling behavior of the NM-Rs in the nest actually aids in energy conservation.

POSTER: PSY-06

Intracelluler and Extracelluar Expression of Carbonic Anhydrase in the Naked Mole-Rat

Mafanta Kajakhe
Faculty Mentor: Professor Daniel McCloskey | Department of Psychology

The Naked Mole-Rat is a mammal that has been found to tolerate high, abnormal carbon dioxide levels, as opposed to most mammals which need oxygen and low, regulated CO2 levels. Previous studies inferred that brain maturation allows the NM-R to better tolerate the high levels of CO2 they experience in the colony nest. This study examined whether the NM-R tolerance and possible preference for high CO2 is related to altered expression of carbonic anhydrase. Carbonic anhydrase exists in multiple isoforms and regulates pH by catalyzing the conversion of CO2 into bicarbonate ions, as well as the reverse reaction. Aside from the blood buffering properties of the enzyme, we were interested in studying the role in neuronal inhibition. We examined Carbonic Anhydrase 14 (CAXIV) located extracellularly in the brain, as well as intraneuronal Carbonic Anhydrase 7 (CAVII) using immunohistochemistry. The results were compared to our previous electrophysiological data showing isoform specific neuronal inhibition in this species. Following up, we focused on testing specific staining procedures, using samples from naked mole-rats and mice, in order to highlight the intensity of both CA isoforms, and found that the extra cellular isoform revealed the stronger inhibition response, further suggesting that the NM-R may be able to change the pH of their extracellular fluid. This buffering procedure is essential in converting the high levels of CO2 into bicarbonate, which allows for high CO2 tolerance.

POSTER: PSY-07

Creation of Educational Materials to Help Elderly Physical Therapy Patients Adapt to Their Post-Injury Lives

Melissa Finnegan (The Verrazano School)
Faculty Mentor: Professor El Samuels | Department of Psychology

Many elderly Americans pursue more active life styles than did their parents and grandparents. Some among the current generation are experiencing "rebirth" after retirement to pursue a wider range of activities than comparable members of previous generations. These factors and more, indisputably affect not only the number/type of injuries these elderly people sustain, but also their abilities to follow a regimen to rehabilitate and thus return to their pre-injury lives. Although research has been conducted on several of these factors, little has addressed the current generation. In addition, relatively little research has been conducted to find effective ways to teach elderly patients new practices that would help them continue their post-therapy recovery and to adapt to their new, post-injury lives. In my research I have investigated and synthesized a broad understanding of the role that lifestyle changes among different elderly populations and on their adherence to therapy regimens. This understanding was applied to create educational materials that can help these patients both adhere to post-therapy regimens and adapt to their post-injury lives. By administering an ad hoc survey to a small (N=30) random selection of elderly patients completing therapy I was able to inquire about how the patient's injury changed their lives. My research will include how to prevent further injuries, how to foresee accidents and how to educate the elderly on injury precautions.

POSTER: PSY-08

Nurturing Kindness Naturally: A Humane Education Program's Effect on the Prosocial Behavior of First and Second Graders Across China

Siham Abdelqader
Faculty Mentor: Professor El Samuels | Department of Psychology

Prosocial behaviors can be defined as social-oriented behaviors that benefit the general good or specific others. Common prosocial behaviors include helping, sharing, donating, and volunteering. Flouri and Sarmadi (2016) note that prosocial behaviors in children predict lower rates of internalizing and externalizing problem behaviors. Kokko, Tremblay, Lacourse, Nagin, & Vitaro (2006 also Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000) further note that children who demonstrate more prosocial behaviors experience lower rates of future aggression and higher academic achievement.

The objective of this study is to conduct secondary analyses of anonymized data to see if the Caring for Life (CFL) humane education program, which is targeted towards animals, had a positive effect on first and second graders' prosocial behaviors. It included 25 public elementary schools in 5 different cities across China. The time span of the evaluation was conducted across 3 years. Each year was evaluated separately, recording results within-subject over that respective year alone. The results showed that despite starting at comparable levels, students who participate in the CFL program showed greater increases in prosocial behaviors towards other classmates than students who didn't participate in the program. Also, students who participated in a more intensive version of the CFL program, demonstrated even greater prosocial behaviors than those who didn't participate in the more intensive version of the program. These results support that a small but growing body of research that includes animals and nature in educational programs can help with encouraging prosociality, empathy, and a concern for peers.

POSTER: PSY-09

Depression in Adolescents: The Comparison of Childhood Depression in Older vs. Younger Children

Toni-Ann Bennett
Faculty Mentor: Professor Ellen-ge Denton | Department of Psychology

Childhood depression is misunderstood and there are multiple factors that can contribute to depression, which affects 3.2% of children aged 3-17 years (approximately 1.9 million) in the United States (Ghandour et al, 2016). Strong et al examined the long-term impact of childhood difficulties on the depressive symptoms of 4,261 junior high school children. The results showed that depressive symptoms increased as the child got older (Strong et al,2016). Terry et al tested the role of self-compassion in incoming college students and how that affected their depressive symptoms. Researchers measured 119 students' self-compassion in stressful situations and found students who showed less self-compassion, were at risk for increased depression (Terry et al, 2013). Lastly, Marcotte et al examined how depressive symptoms 2 years following their post-secondary transition could be predicted by depressive symptoms before the post-secondary transition. They found that second-year students showed more depressive symptoms than incoming freshmen and that could be influenced by personal factors, family functioning, and adjustment to college after the transition (Marcotte et al, 2017). Upon reading the literature, older children may express more depressive symptoms due to their inability to handle the increased workload of school, learning how to cope with being away from home, and may feel disconnected from themselves and others. I will compare childhood depression between older versus younger children using data collected from 50 Guyanese orphans ages 10-21 years of age. I hypothesize that compared to younger children, older children will show more depressive symptoms. In this study, we will better understand depression in adolescents.

POSTER: PSY-10

How Can We Measure Depression Among Guyanese Orphans?

Judeline Came | Chantel Krampah
Faculty Mentor: Professor Ellen-ge Denton | Department of Psychology

Depression is the leading cause of disease among youth aged 15-29 years old (WHO, 2017) and more than 80% of suicide cases suffered from depression disorders. Therefore, the aim of this project is to determine construct and content validity of depressive symptom measures, used in a non-western, study sample. Using multiple assessments of depression, the Beck Depression Inventory (BDI) and Center for Epidemiological Studies-Depression (CESD), given to orphaned Guyanese youth we will determine the appropriate mean average and cut-off score for depression. We will further analyze the sensitivity analyses for the BDI and the CES-D derived from the literature. In this study, we reviewed 10 empirical papers that report depression mean and cut-off scores using the BDI and CES-D. Each study gives sensitivity analyses for both instruments. We compare the mean and cut-off scores from these studies to our sample of Guyanese orphans (N = 88), with an average age of 13 years old (ranging from 5-21 years old), who were given the same instruments in 2014 and 2017. The implications of our research findings will improve accurate screening of depression among youth and serve as the first step to classifying poor, high-risk youth for suicide prevention treatment.

POSTER: PSY-11

Length of Stay in Institutional Care as a Predictor of Internalizing and Externalizing Clinical Symptoms

Marco Biagio Costanza (Macaulay Honors College)
Faculty Mentor: Professor Ellen-ge Denton | Department of Psychology

Approximately 8 million youth reside in institutional care in low and middle-income countries (LMIC) Existing global research links institutional care to increased rates of mental illness. Positive Outcomes for Orphans, a hallmark longitudinal study, found orphaned youth had significantly less internalizing symptoms than their housed counterparts, after 3 years in 5 LMIC. Five other studies report that length of stay is negatively correlated to internalizing and externalizing symptoms.

To understand how length of stay (LOS) is related to internalizing and externalizing symptoms, I compared a sample of youth, ages 7-18 (N=50), residing in institutional care in Guyana. LOS was categorized as 1-2 mos. (N=7), 3-6 mos. (N=8), 6-12 mos. (N=4), 1-2 yr. (N=13), and 3 yr. (N=13). Internalizing symptoms included depression, anxiety, and somatic complaints; externalizing symptoms included anger/irritability, and mania. Symptom classification was derived from the existing literature in LMIC, and measured by the DSM-5 Level 1 Cross-Cutting Diagnostic Tool. I hypothesized that youth with greater LOS in institutional care, will report fewer clinical internalizing and externalizing symptoms.

Means Difference between 1-2mos. and 3yr. LOS depicted slight decreases in symptom frequency over time ($p>.36$). Analysis of variance indicated increases in internalizing and externalizing clinical symptoms on all scales within 1st year of placement. Post-1 year, decreases in clinical symptoms were observed, with exceptions to somatic complaints and mania ($F5,44> .33$, $P>.25$). Internalizing symptoms of anxiety and depression were most frequently reported. Ultimately, results preliminarily identify a potential critical period within 1st year of placement, in which interventions may support internalizing and externalizing needs of orphaned youth.

POSTER: PSY-12

Gender and Sexuality with the Work Place

Denis Eder | Tristiana Adragna (Macaulay Honors College)
Faculty Mentor: Professor Florette Cohen | Department of Psychology

Two studies were conducted to examine the relationship between gender and sexuality, and prejudice in the workplace. In study 1 participants read 1 of 2 identical blurbs about a workplace male individual of either a different gender and/or sexuality, under either bogus pipeline, prejudice or neutral conditions. Participants were then asked to answer some questions about the workplace individual's likability and workplace performance, and then completed a homophobia scale. Study 2 was identical to study one except they read one of 2 identical blurbs about a workplace female individual of either a different gender and/or sexuality. Study 1 results yielded no significant results for workplace bias all $F's < 1$, all $p's >.30$, or homophobia scales all $F's < 1.8$, all $p's >.18$. Study 2 2(gay, straight) X 3(bogus pipeline, prejudice, neutral) univariate ANOVA results yielded only 1 significant main effect for homophobia $F (1, 65) =5.86$, $p=.02$. When participant read the vignette about the gay female worker their homophobia scores were lower than when they read the vignette about a female straight worker ($M=4.11$, 3.66 respectively). Though gay individuals tended to be rated more positivity regarding their work on average, suggesting further research is needed.

POSTER: PSY-13

Measuring the Effects of Humorous and Non-Humorous Readings on Mood and Retention in College Students

Marina Nashed
Faculty Mentor: Professor Florette Cohen | Department of Psychology

Humor has been a very controversial topic due to its effects on the physiological and psychological aspects on the human body. Humor is a stimulus to laughter which increases the release of endorphins in the body leading to happier mood. Additionally, previous research measuring the effect of humor revealed that humor increased communication and attention and retention in the classroom setting. In the present study 58 participants from the College of Staten Island rated their mood on a scale of 1 to 10 and then read a humorous vignette or a non-humorous vignette. They then answered two questions on the vignette they read and once again rated their mood. A repeated measures ANOVA revealed a significant effect of humor on mood, $F(1,55)=10.06$, $p.=.002$, suggesting that humor had a positive effect on mood ($m=5.13$, 6.70 respectfully). Additionally a univariate ANOVA revealed a significant effect of humor on retention of information, $F(1,56)=10.02$, $p.=.002$, suggesting that humor had a positive effect on the number of questions answered correctly ($m=.90$, 1.68 respectfully). As predicted the use of humor revealed increased reported mood and the students ability to retain and remember information which may have implications for a healthier classroom environment.

POSTER: PSY-14

Evaluating the Effect of Time Pressure on Students' Test Anxiety level during Standardized Exams

Nardeen Soliman (The Verrazano School) **| Daniel Kallini | Lidya Rizkalla | Marina Michail** (The Verrazano School)
Faculty Mentor: Professor Florette Cohen | Department of Psychology

It has been widely accepted in research that negative emotions and elevated stress level have a negative impact on the etiology of declining grades. It is believed that stress and anxiety influence one's test taking skills. Furthermore, it's been proven that worrying about test performance does indeed induce test anxiety especially with first year college students who tend to worry more frequently verses senior students. There are wide variety of reasons that induce anxiety during exams, including cognitive, emotional, physiological and behavioral components. In addition, many college students prejudge their ability to perform well during standardized exams due to their fear of not meeting their expected aim. The purpose of this study was to see the correlation between time pressure during standardized exams and its effect on test anxiety. Using a sample of undergraduate students at the College of Staten Island our participants (N=100) completed 10 Graduate Record Examinations (GRE) multiple choice questions from the math section under either timed or no timed conditions and were either told that their scores would or would not be handed in to their professors. They then completed the Beck Anxiety Inventory scale. A 2(timed, no timed)X 2(handed in, not handed in) Univariate ANOVA revealed a significant main effect for increased anxiety by time $F(1,99)=7.30$, $p=.008$. Results showed that college students who were told that they had a time limit rated themselves as much more anxious ($m=19.06$, 12.41 respectively). Results will be further discussed.

POSTER: PSY-15

The Relationship Between the Presidency and Economic Beliefs

Kailey Volpetti
Faculty Mentor: Professor Florette Cohen | Department of Psychology

This study examined participants' approval rating of President Donald Trump and their projection for their economic situation this year based on immigration concerns. Participants read a short vignette either about how building a wall would save lives or cost billions of dollars. Then they rated how much they approved or disapproved of President Trump on a 5-point Likert scale, and how much better or worse they believed their economic situation would be this year. For 94 participants (48 female, 42 male), a 2(male, female) X 2(save lives, cost billions) Univariate ANOVAs revealed only a significant main effect $F(1,86)=3.82$, $p=.05$ between building a wall and people's economic situation $m=2.63$ and 3.02 respectively. Those who read that building a wall would cost billions believed that their economic situation would be better this year. Further research is needed to assess the underlying psychological impetus.

POSTER: PSY-16

Vaccines and Autism

Christina Craven (The Verrazano School)
Faculty Mentor: Professor Holly Weisberg | Department of Psychology

While research suggests there is no link between vaccines and autism spectrum disorder, individuals continue to believe that vaccines cause autism spectrum disorder. An article published in The Lancet, a medical journal, in 1998 by Andrew Wakefield and colleagues stated that there was a link between the measles, mumps, and rubella vaccine and developmental disorders. This caused a major uproar among the public and led to fear and distrust of vaccinations. The article was later retracted and an announcement in The Lancet emphasized that aspects of the article were incorrect. This paper will review research examining why individuals continue to believe there is a correlation between vaccines and autism spectrum disorder.

POSTER: PSY-17

Skin Conductance Response During Emotion Processing and Relations with Autism Traits

Joseph Gyasi
Faculty Mentor: Professor Jennifer Wagner | Department of Psychology

The sympathetic nervous system is the branch of the autonomic nervous system that oversees our 'fight or flight' response to threatening situations. Scientists have found that skin conductance responses (SCR) are a measure that reflects sympathetic arousal, with one example of this seen in work showing that SCR increases during the viewing of emotionally-salient images (e.g. Bradley et al., 2008).

Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by socio-communication difficulties (e.g. Jones & Schwartz, 2009) and restricted and repetitive behaviors (e.g. Watt et al., 2008), and individuals with ASD have a range of sensory processing difficulties that might relate to these behavioral characteristics, including heightened sensitivity to sound (e.g. Chang et al., 2012). Work has also found that individuals with ASD show difficulties regulating sympathetic arousal (e.g., Zantinge et al., 2017), and this might underlie the sensory issues seen in ASD (e.g. Matsushima & Kato, 2013).

The current research expands on prior work to study a non-clinical sample and asks how sympathetic arousal relates to autism traits in the general population. Thirty-six students between the ages of 18

and 40 years old participated in this study. SCR was recorded during a 5-minute baseline period and then while participants viewed 60 images of positive, negative, and neutral stimuli in a semi-randomized order. Participants then completed two questionnaires measuring autism traits, the Social Responsiveness Scale, Second Edition (SRS-2) and the Broader Autism Phenotype Questionnaire (BAPQ). Based on past work (Bradley et al., 2008), our first hypothesis is that larger SCR will be produced while viewing positive and negative pictures as compared to neutral pictures. Correlational analyses will then be used to investigate associations between SCR measures and autism traits. We hypothesize that higher autism traits will correlate with higher SCR at baseline and while viewing the positive and negative pictures. This work will further our understanding of how differences in sympathetic regulation could relate to autism-related characteristics in the general population.

POSTER: PSY-18

Attention to Emotional Faces as It Relates to Autistic Traits and Emotion Recognition in the General Population

Alexis Rajpersaud
Faculty Mentor: Professor Jennifer Wagner | Department of Psychology

Autism spectrum disorder (ASD) is a neurodevelopmental disorder that is characterized by social-communicative difficulties that vary in severity. Eye-tracking work has found that individuals with ASD show differences in social attention (e.g. attention to faces) and emotion recognition as compared to neurotypical individuals (e.g. Pelphrey et al., 2002), and that variability in attention to certain features of the face (e.g. eyes vs. mouth) can be predictive of social impairment (e.g., Klin et al., 2002). Research has also begun to examine social attention as it might relate to variation in autism traits in individuals in the general population who are not clinically diagnosed with ASD. For example, work by Chen and Yoon (2011) presented college students with videos of an actor speaking with either direct or averted gaze, and they found that individuals low on autistic traits looked more to the eyes when the speaker had direct gaze as compared to averted gaze, while students high on autistic traits did not show a difference. The present study will extend this area of study to analyze attention to emotional faces as it relates to autistic traits and emotion recognition in college students.

Participants included 75 students between the ages of 18 and 46 years old. Eye-tracking data was recorded while participants viewed 24 faces showing three emotions (8 happy, 8 fearful, 8 neutral) and 24 houses (as control stimuli) in a semi-randomized order. After the eye-tracking task, subjects then completed questionnaires assessing autism traits and emotion recognition. Based on past work, we hypothesize that adults will look more to eyes than mouth while viewing emotional faces (e.g. Pelphrey et al., 2002). Correlational analyses will also explore associations between attention to faces and both autism traits and emotion recognition. We hypothesize that individuals who score higher on autism traits will show less attention to eyes and more attention to mouth. Also, we predict that individuals who look more to the eyes will show higher emotion recognition abilities. This work will further our understanding of how attention to faces might reflect autistic traits in the general population, and how social attention might be a marker of emotion recognition skills.

POSTER: PSY-19

Bridging the Employment Gap for Autistic College Students: Examining their Interests and Goals

Chinnu Cheriyan (The Verrazano School) | **Priunka Choudhury**
Faculty Mentor: Professor Kristen Gillespie-Lynch | Department of Psychology

Individuals with autism often experience stigma in school and work settings and face challenges when attempting to obtain employment. Past research in this area has focused on the challenges that autistic individuals face in the workplace. However, there is no research systematically examining career goals of autistic college students. The current study focuses on the long-term career goals of autistic college students (n=23) in comparison with non-autistic students (n=23), using interviews to gather students' perspectives. Questions about future goals were the focus of this study. Two independent coders obtained reliability of 80% or higher in coding students' responses. Data were analyzed and organized into categories.The results indicated no clear differences between autistic students and non-autistic students in terms of career goals. Both groups want to find employment upon graduation from college, as well as pursue higher education and help others. However, autistic students may face greater challenges reaching their goals. Through the aid of intervention programs and other support services, autistic people can work to overcome obstacles and achieve their goals.

POSTER: PSY-20

Examining the Relationship Between Race and Stigma towards Autism Spectrum Disorder

Alexandra Cosenza (Macaulay Honors College) | **Faith James**
Faculty Mentor: Professor Kristen Gillespie-Lynch | Department of Psychology

While awareness about conditions such as Autism Spectrum Disorder is rising, people still hold biases against individuals who differ from themselves (White et al, 2016). Research about biases towards people with disabilities has generally focused on explicit stigma (Stier & Hinshaw, 2007). However, implicit stigma may impact behaviors more than explicit stigma. Emerging evidence suggests that biases towards various disabilities may intersect with biases towards various races (Mandell et al. 2002;2009). We examined implicit and explicit stigma towards ASD and CD, as well as possible implicit tendencies to view white children as autistic and black children as having CD. We used an Implicit Association Test (IAT) and measures of explicit stigma to assess implicit and explicit stigma towards developmental disabilities held by 512 undergraduate students from two large public universities, the College of Staten Island (n=381) and the University of Georgia (n=131). Two IATs were used to test for implicit biases, the first assessed stigma against ASD and Conduct Disorder and which of the two is more stigmatized. The second, measured the function of race as an identifier of either ASD or CD. After the two IATs, we tested for explicit biases through a randomized image and a vignette. The image was either of an African American or a European child, paired with either an ASD or CD vignette. After the IAT tasks, we tested for explicit biases through randomized image and a vignette. The image was either of an African American or a European child, paired with either an ASD or CD vignette. After reading the vignette, the participants were presented with a Social Distance Scale (Gillespie-Lynch et al. 2015) to show how willing the individual was to be associated with the child at varied levels of intimacy. Comparing differences across sites revealed that participants in NYC reported heightened social distance towards children with ASD and CD. As hypothesized, participants reported heightened stigma towards the child with CD compared to the child with ASD despite race. As hypothesized, participants at both sites were more likely to associate good words with ASD and bad words with CD and to associate European-American images with ASD and African-American images with CD.

POSTER: PSY-21

Can an Autism Training Help Increase Autism Knowledge in Kenya?

Salvatore Mosomillo | Ashley Green
Faculty Mentor: Professor Kristen Gillespie-Lynch | Department of Pyschology

Parents and educators in Kenya report that community members have high stigma towards autistic people and some believe that evil spirits, witchcraft and spiritual gaps are the cause of ASD (Gona, et al. 2015). To help people understand ASD, an online training was developed and evaluated in previous studies (Gillespie-lynch et. al, 2015 Obeid et al., 2015). The current study examines if an in-person autism training helps people in Kenya understand more about ASD and decreases stigma.

There were 89 participants from Kenya. However, only 74 people completed all pre- and post-tests. Participants attended one of two trainings and they were invited to complete pre and post-test assessments. A quasi-experiment was performed. The quasi-independent variable in this study was the autism training. The dependent variables were autism stigma (Social distance scale) and knowledge (Stone's Autism Survey and adaptation of the ASK-Q).

Participants were asked to first complete a pre-test questionnaire describing their demographic information. They also were asked to complete open-ended questions assessing attitudes toward autism and community supports. This training included up-to-date information about autism, evidence-based supports and educational practices for autistic people, and videos of autistic people sharing their insights about autism. The study took 3-4 hours in total. The authors of this abstract entered the data using Microsoft Excel.

Knowledge improved with training across measures (ps < .003). No change in stigma was observed ($p = .56$). Pre-test stigma was lower ($M = 9.12$; Range = 6-24) than stigma reported by college students in the US ($M = 11.41$), Lebanon ($M = 12.94$) and Japan ($M = 15.65$) who completed assessments online.

Previous research has shown online training about autism increases knowledge and decreases stigma associated with autism among college students (Gillespie-Lynch et. al, 2015). The current findings indicate that the in-person training conducted in Kenya helped people understand autism better and develop strategies to help people on the spectrum contribute as valuable members of society.

POSTER: PSY-22

Eat, Sleep, Eat, Play, and Repeat: Daily Activities and Motor Skill Acquisition of 6-, 9-, 12-month-old infants

Wai Sum Alzina Fok (Macaulay Honors College)
Faculty Mentor: Professor Lana Karasik | Department of Psychology

Theories of developmental psychology claim that exploration and movement are important for normal healthy development. Pediatricians, educators, and clinicians advise parents to provide plenty of opportunities for infants to move and play. But, do caregivers heed their advice? Using a time diary, mothers reported 6-, 9-, and 12-month-olds' daily activities for one day and level of motor skill. First, I described age-related changes in infants' activities. Second, I compared infants' activities by the level of motor skill. I found that time and frequency for meals and family engagement remained constant across age groups. However, time spent playing in infant equipment and grooming decreased as infants age, while time spent playing indoors increased with infants' age. Moreover, I found that infants who were able to stand and walk spent more time playing unrestricted indoors. Surprisingly, I found that 40% of the sample attended daycare and 63% of mothers were able to provide information on their infants' activities in daycare. I also found that infants who attended daycare spent more time playing unrestricted outdoors as compared to infants who remained at home. Findings from this study will shed light on how daily activities are distributed over the course of a day and potentially shape infants' opportunities for learning. Differences in daily activities for infants who attend daycare versus those that stay at home may inform childcare guidelines.

POSTER: PSY-23

Characterization of the Development of Dopamine Neuron Release Sites in the Medial Prefrontal Cortex

Philip Fonseca
Faculty Mentor: Professor Leora Yetnikoff | Department of Psychology

Why are adolescents prone to impulsivity and risk-seeking? One hypothesis is that it is due to the protracted maturation of neural circuits in the medial prefrontal cortex (mPFC), a brain region that is involved in executive functions and decision making. Dopamine innervation of the mPFC occurs gradually over the lifespan, continuing well into adulthood. Because dopamine in the mPFC contributes to processes of reward, learning, memory, and attention, it is thought that the protracted development of this circuitry directly contributes to the impulsivity and risk-seeking behavior observed in adolescents. It has recently been recognized that dopamine neurons also release glutamate, a process referred to as co-transmission, but the ontogeny of glutamate release from dopaminergic neurons is still unknown. Some studies suggest that glutamate release from dopamine neurons is developmentally regulated, with higher levels of glutamate release occurring early in life. The aim of this study was to visualize dopamine and glutamate neurotransmitter release sites from dopaminergic terminals in the mPFC during adolescence and adulthood by using the Proximity Ligation Assay approach. It was hypothesized that there are fewer dopamine and glutamate release sites in the mPFC during adolescence compared to adulthood given that dopamine innervation of the mPFC is still ongoing during adolescence. However, it was also expected that greater numbers of glutamate release sites than dopamine release sites would be observed in the mPFC during adolescence. The results of this study contribute to our understanding of the development and organization of dopamine circuitry in the mPFC, and to our understanding of mechanisms underlying impulsivity in adolescents.

POSTER: PSY-24

Loud and Clear: The Science and Politics of Marijuana

Brendali Nunez
Faculty Mentor: Professor Leora Yetnikoff | Department of Psychology

Marijuana has been a hot topic for the last 20 years in U.S. media, legal and research arenas. As discussions regarding the legalization and decriminalization of marijuana continue to flourish, so too is there a pressing need for research on marijuana's effect on the human brain. Adopting an interdisciplinary approach, I have analyzed research articles from diverse fields that have examined the neurological, psychological, historical, and societal effects of marijuana. The work described herein will discuss the short- and long-term effects of marijuana on the brain and the individual and, importantly, the way the long-term effects can vary widely depending on the social position of the individual. From neurological and psychological research, we know that marijuana has an interaction with mental health, wherein it can affect illnesses such as anxiety, depression, bipolar disorder, schizophrenia, and neurodegenerative disorders like epilepsy. From a sociological and historical context, the criminalization of marijuana has served as a mechanism to promote the criminalization of Black and non-Black people of color, while the legalization of marijuana and its incorporation into the licit flows of the capitalist consumer market has directed the profits of the marijuana market to white people, almost to the exclusion of people of color. This review highlights some discoveries of how marijuana, endogenous cannabinoids, and the endocannabinoid system relates to our neurological and psychological health, and how marijuana has been used throughout history to target people of color in America.

POSTER: PSY-25

Visualization of Local Neurotransmitter Release Sites from Dopamine Neurons in the VTA and SNc

Danielle Savino
Faculty Mentor: Professor Leora Yetnikoff | Department of Psychology

The brain is one of the most vital organs in our bodies. It controls all the internal processes of our other organs, as well as our behaviors and interactions with the external world. Underlying all our behaviors are motivational and reward processes that are mediated by specific neural circuits. In order to understand how processes of motivation and reward come about, the arrangement and functionality of the brain's circuitry must be examined. Two regions in the midbrain, the ventral tegmental area (VTA) and the substantia nigra pars compacta (SNc) play a significant role in the processes of motivation and reward. These regions contain dopamine neurons whose efferent axons project to target regions that contribute to the reward circuit of the brain. Prior studies have demonstrated that glutamatergic inputs to the VTA and SNc regulate the activity of dopamine neurons. However, dopamine neurons also release glutamate. While it is known that dopamine neurons have local efferent connections that contribute to the local regulation of dopamine neuron function, it is not known if they do so through the release of dopamine or glutamate neurotransmitters. Thus, the purpose of this study was to determine whether dopamine neurons in the midbrain locally release glutamate in addition to dopamine. In order to achieve this objective, we used the proximity ligation assay (PLA) technique to visualize local dopamine and glutamate neurotransmitter release sites from dopamine neurons in the VTA and SNc of adult mice. Our study demonstrated that dopamine neurons do release glutamate locally to regulate the activity of VTA and SNc neurons. These results contribute to our understanding of the local regulation of VTA and SNc neurons. Dopamine neurons release both dopamine and glutamate in the midbrain, thereby regulating the function of the brain's reward circuity to ultimately affect the motivational and behavioral processes needed for an animal's survival.

POSTER: PSY-26

Dissociation of Media Literacy Knowledge and Skills in a Diverse Undergraduate Sample

Cody Barshaba | Arshia K. Lodhi (The Verrazano School)
Faculty Mentors: Professor Patricia Brooks and Jessica Brodsky | Department of Psychology

As critical media consumers and producers, students must possess media literacy knowledge and skills to access, analyze, evaluate, and create online media (Hobbs, 2010). Recent research suggests a possible dissociation between college students' media literacy knowledge and skills. Students seem to know that media may be biased and inaccurate (Brodsky & Brooks, 2019), yet they often fail to accurately judge the credibility of online information (McGrew et al., 2018). Unlike expert fact-checkers, college students rarely engage in fact-checking strategies such as leaving the original website to verify information with independent external sources ("lateral reading" cf. Wineburg & McGrew, 2017). The current study assessed media literacy knowledge and skills in a sample of college students and examined relationships across measures to further curriculum development. Participants (N=40, M age 20.5 years) completed an online survey and fact-checking task. The survey contained a general media literacy scale (Powers, Brodsky, Blumberg & Brooks, 2018), a news media literacy scale (Ashley, Maksl, & Craft, 2013) and a self-report of engagement in factchecking strategies (Blakeslee, 2004; Caulfield, 2017). In the fact-checking task (adapted from Caulfield, 2019; McGrew et al., 2018), participants were asked to judge whether an online article was a reliable source of information and justify their answer. Participants averaged high scores on general (92.7%) and news (81.8%) media literacy scales, and a majority (62.5%) selfreported regular use of the recommended fact-checking strategies. Yet when evaluating an online article, 75% of participants never left the original webpage.

Only 15% clicked on links within the original site and only 10% did an external search to consult other sources. Although participants' general and news media literacy were moderately correlated (r(40)=.43, p=.006), media literacy knowledge was unrelated to selfreported and observed fact-checking behavior. These results suggest that participants may lack awareness of their habits when related to verifying information. The results also suggest that media literacy knowledge scales may have low predictive validity in relation to both self-reported and observed factchecking skills.

POSTER: PSY-27

An Intervention to Improve Paraphrasing Skills in College Students

Arshia K. Lodhi (The Verrazano School) | **Cody Barshaba**
Faculty Mentors: Professor Patricia Brooks and Jessica Brodsky | Department of Psychology

Information literacy, including the ability to read and paraphrase scientific texts, is considered a critical outcome of undergraduate education (APA, 2013). Research suggests that college students may engage in plagiarism unintentionally (Park, 2003). Direction instruction in summarizing key ideas in one's own words can reduce plagiarism (Obeid & Hill, 2017 Walker, 2008). We report the results of an intervention to teach PSY100 students how to read and summarize abstracts of scientific articles in their own words. We adopted a computational approach, using the CHIP command from CLAN programs accessed via the CHILDES project (MacWhinney, 2005 2019). The CHIP command was originally developed to analyze adult-child verbal interactions, and yielded a Rep_Index score used as an indicator of word-level overlap.

PSY100 students (N=137) completed two online homework assignments on reading and summarizing abstracts of scientific articles and an end-of-semester post-test, administered via Qualtrics software. In Homework #1, students were introduced to Google Scholar, summarized the main conclusions of a scientific abstract, watched a video about reading a scientific abstract, and summarized a second abstract. In Homework #2, students summarized the third abstract, watched a video about strategies for paraphrasing, and summarized a fourth abstract. At post-test, students summarized the fifth abstract.

The CHIP command generated a Rep_Index score indicating word-level overlap between each student's summary and original abstract. Lower scores meant that students used more of their own words in their summaries. A mixed-design repeated-measures ANOVA revealed decreased Rep_Index scores over time, $F(2,244) = 31.80$, $p < .001$. In keeping with previous studies (Hill & Obeid, 2017 Walker, 2008), our findings indicate that direct instruction in reading and summarizing scientific texts can improve students' ability to paraphrase information. Our findings also indicate that scaffolded online homework assignments offer a viable approach for teaching these skills. Next steps include analyzing summaries to see if students accurately described the main points of each abstract.

POSTER: PSY-28

The Dynamics of School Shootings

Mohamed Hammam (The Verrazano School)
Faculty Mentor: Professor Peter Costa | Department of Psychology

A school shooting is defined as an attack in an education facility where a faculty member or student is injured through the use of a firearm (Pappas, 2015). School shootings are classified into four categories, with these four categories based on the motives of the perpetrator and the number of victims (Newman & Fox, 2009). The four categories are rampage shootings, mass murders, terrorist attacks, and targeted school shootings (Muschert, 2007). This research study explores the occurrences of school shootings in contexts, such as the motives lying behind why they occur, the typical profiles of school shooters, and the underlying dynamics from biological, cognitive, and social perspectives. Furthermore, this research study investigates the warning signs that school personnel, law enforcement, and mental health professionals can observe in a potential school shooter. In addition, the present study examines preventive measures that can be used by teachers, healthcare professionals, and law enforcement personnel to prevent future school shootings from occurring. Finally, a case study of the Columbine Massacre of 1999 is used to illustrate the characteristics, motives, problems, and other major research findings about the impact of school shootings on students, families, and society.

POSTER: PSY-29

The Consolidation of Infants' Motor Problem Solving Through Napping and Night Sleep

Angelina Allia (Macaulay Honors College)
Faculty Mentor: Professor Sarah Berger | Department of Psychology

In adults, napping and night sleep have an additive effect on motor learning (Korman et al., 2007). Infant research typically tests the impact of either napping or night sleep on learning, but there may be a similar cumulative pattern (Seehagen et al., 2015). However, because infant sleep differs from adult sleep in duration, timing, and structure (Ednick et al., 2009), we cannot generalize across populations. The current study examines the roles of napping and night sleep on motor problem solving in infancy. Thirty-eight infants, within a week of giving up crawling, stood upright at the entrance of a tunnel. Navigating the tunnel requires a postural shift from walking to crawling, which is taxing for new walkers. A strict 15-step training protocol controlled when and how to highlight relevant details of the task. The protocol included 3 sets of 5 task-relevant prompts: standing at the start of the tunnel, placement on hands and knees, and rolling a toy through the tunnel. The session ended once infants exited the tunnel or exhausted the protocol. Infants were tested on this task again, after their nap (n=14), after a delay without a nap (n=14), or immediately (n=10) after training. They also received it the next morning after night sleep. The primary outcome measure for all sessions was the number of prompts. Proportion of change in prompt number from training to test and test to follow-up were calculated. The immediate group showed a 40% improvement from training to test, but a 35% decrement from test to follow-up. The nap group showed a 20% decrement from training to test, but a 47% improvement from test to follow-up. The no nap group showed a 71% decrement from training to test, and a further decrement of 9% from test to follow-up. Surprisingly, the nap group did not improve from training to test however, they were the only group to improve after night sleep. In contrast, neither of the other groups demonstrated long-term improvements. Thus, napping and night sleep have an additive effect, but neither is sufficient in isolation for motor problem solving in infancy.

POSTER: PSY-30

Memory Decay & Mind Wandering

Hannah Bareket (The Verrazano School)
Faculty Mentor: Professor Timothy Ricker | Department of Psychology

This study examines the relationship between the rate of memory decay from working memory and mind wandering. Working memory is a system that stores information for use in cognitive tasks. Mind wandering is when your mind drifts from the task at hand to other unrelated task matters. Increases in the total retention time in working memory consistently lead to increased forgetting, but the cause of this forgetting is debated. We predict that mind wandering may be the cause of this forgetting. Alternatively, it may be that mind wandering has little to do with time-based forgetting in working memory. To evaluate these hypotheses, we introduced an experiment in which subjects must recall the three memory items that were presented to them for a brief amount of time. After the three memory items were shown there was a variable retention interval before memory recall. Longer delays led to lower performance. Mind wandering rates were only weakly related to the rate of forgetting. What these findings mean for time-based forgetting is discussed.

POSTER: PSY-31

Mathematical Processes Modeling of Visual Masking

Caryn Darmoni (The Verrazano School)
Faculty Mentor: Professor Timothy Ricker | Department of Psychology

In this study, we examine how visual masking affects short-term memory creation. Masking is the presentation of similar sensory input to obscure the sensory information of a target item. We present a visual item, mask it, and examine the participants recall. We manipulate the available time to view the visual item before the mask is presented and observe changes in memory recall. Previous studies showed a decrease in participant's recall when a mask is presented in closer temporal proximity to the memory item. We use mathematical modeling to explore two theories in order to better understand how the process of memory creation is disrupted by the mask. One theory is that masking disturbs encoding into working memory, which would stop the memory from being created. We will see a higher rate of guessing when the mask is presented more quickly, if this is the case. The second theory is that masking acts like background noise during memory consolidation and slows down the process of memory creation. If this is true, we should not see a complete loss of the memory item with faster masking onset. Instead, we should see decreased memory precision or an increase in the proportion of gist/categorical memories at the expense of exact-feature memories. Our results and their implications are discussed in depth.

POSTER: PSY-32

Cognitive Load with Continuous Stimuli in Visual Working Memory

Alani Harrison
Faculty Mentor: Professor Timothy Ricker | Department of Psychology

Working memory is a system where processing and maintenance mechanisms occur concurrently to hold and manipulate information. We examine the effects of cognitive load on continuous visual working memory. Cognitive load is the relative amount of time where attention is distracted during memory retention. Ricker and Cowan (2010) and Vergauwe, Camos, and Barrouillet (2014) suggest that cognitive load may not impact continuous visual working memory. We investigate this question in a serial recall task where each memory item was followed by a brief delay. During the delay period a cognitive load task consisting of a series of 2, 4, or 6 forced-choice tasks was presented. Increasing

the cognitive load during the delay by increasing the number of choices increased the mean response error. This indicates that recall accuracy for participants significantly decreased with increased cognitive load. The results suggest that cognitive load has a detrimental effect on the maintenance of continuous visual representations. In addition, our findings further support that processing and maintenance tasks cannot occur at the same time due to the limited amount of attentional resource available, aligning with the Time-Based Resource Sharing (TBRS) model.

POSTER: PSY-33

Replicability in Dietary Choices and Environmental Awareness Study

Kwan Yee Ho (The Verrazano School)
Faculty Mentor: Professor Valkiria Duran-Narucki | Department of Psychology

This literature review will address different findings between a fieldwork project and previous studies to understand the variables that can affect replicability in social science (psychological) research. I will analyze the structure of this specific research topic and fieldwork and the more general question of replicability of psychological research studies. The fieldwork study to be analyzed was based on previous psychological studies of the relationship between dietary choices and environmental awareness. Dietary choices, conscious or not, impact the environment and leave environmental footprints. People may or may not be aware of this impact. Dietary choices and environmental awareness are variables that are indirectly correlated with one another. Environmental awareness is an individual's knowledge and passion about the environment which was measured by knowledge and awareness of agricultural and environmental impact. The variables were hypothesized to be correlated because of the connections between agricultural practices on human-made environmental effects. Although the results of the study were inconclusive, the data concluded that there was a non-significant correlational relationship between the variety of independent and dependent variables. The literature review will further look into the non-significant correlational relationships between the independent variable (dietary choices) and the many other factors that are connected. The research study on dietary choices and environmental awareness also collected information on other factors such as demographics. The wide variety of demographic information such as gender, education, socio-economic status and religious affiliation posed a series of non-significant correlational relationships. The population, demographics and culture of the participants are all variables that could have had an effect on the final outcome of the replicated study. The final outcome of the replicated inconclusive study begs the question in science research of the validity of psychological studies when they lack replicability.

POSTER: PSY-34

Understanding Littering Behavior

Marwa Shueib | Adaeze Ezeh | Beatrice Ajayi
Faculty Mentor: Professor Valkiria Duran-Narucki | Department of Psychology

The Psychology of Littering Project is an ongoing collaboration between the College of Staten Island and the Staten Island Borough Hall. This project strives to gain deeper understanding of littering behavior and discover effective anti-littering interventions. The goal for this project is to decrease the amount of litter in the Staten Island community. After administering an opinion survey to Staten Island residents at the St. George Ferry Terminal, Staten Island Mall and online using Qualtrics, an analysis of four open-ended questions that were part of the survey was completed to interpret the opinions of Staten Island residents. The participants' responses (N = 623) to each open-ended question was categorized to describe the diversity of the responses. The response categories were then used to come up with better questions for a second survey. The second survey focuses on

understanding Staten Island residents' perception of belonging to their community, specifically, their neighborhood. For example, some questions ask about living situations (e.g. rent or own), belonging to an association (e.g. PTA) and the amount of time that they have lived in their neighborhood home. Additionally, based on evidence from existing literature on behavior analysis, an experimental design will be created to test a reward system that may decrease littering behavior on Staten Island.

SOCIAL WORK

CONFERENCE LOCATION:
2ND FLOOR–WEST LOUNGE

POSTER: SWK-01

Healthcare Awareness from Parents of Child(ren) with Dwarfism

Samantha Wong
Faculty Mentor: Professor Esther Son | Department of Social Work

The purpose of this study is to examine the effects of parental English proficiency and disability status on parental awareness of health and support resources, and their satisfaction with healthcare communication for their children with dwarfism. This quantitative study collected data using an online survey of 90 parents of children with skeletal dysplasia, also known as dwarfism. The data was analyzed using SPSS v.23. The analysis was performed using descriptive statistics and inferential statistics, including t-test, ANOVA, and Chi-square test. The findings show that parental English proficiency affects the lack of parental awareness of health and support resources and their satisfaction with healthcare communication for their children with dwarfism. Parents who spoke English fluently were more aware of health resources than parents who had a lack of proficiency. Parents who spoke English fluently were more satisfied with healthcare communication for their children than parents who lacked proficiency. Parents who both have dwarfism, parents who did not have dwarfism, and parents that one of them has dwarfism were aware of different healthcare resources, different support resources, and were highly satisfied with healthcare communication for their children with dwarfism. The findings from the research present implications for social work practice and policy to increase parental awareness on health and support resources, as well as improving parental-professional interactions.

WORLD LANGUAGES AND LITERATURES

CONFERENCE LOCATION:
2ND FLOOR–WALKWAY

POSTER: WL&L-01

The Effect of Motivation on the High School Spanish Classroom

Xochitl De La Luz
Faculty Mentor: Professor Francisco Salgado-Robles | Department of World Languages and Literatures

Foreign language learning is becoming one of the most relevant issues to take into account in education. The globalization process makes inevitable to communicate with people from different countries and cultures. This situation requires foreign language learning skills, knowledge and motivation. Motivation plays a key role, since it provides the first push to initiate a successful language learning process. This study is focused on some motivational strategies to maximize high school students' language learning skills. The implementation of communicative, group and participative activities help students to be motivated in the Spanish classroom.

POSTER: WL&L-02

Heritage vs. Second Language Learner Attitudes in a Novice-Level Mixed Spanish Class

Briana Lopez
Faculty Mentor: Professor Francisco Salgado-Robles | Department of World Languages and Literatures

This qualitative study examines the attitudes and experiences of 34 heritage language learners (HLL) and second language learners (L2L) in a beginning-level Spanish class with a mixed population (HLLs and L2Ls) in the same classroom. The findings indicate both groups not only expressed a positive attitude toward mixed beginning-level Spanish classes, but also noticed specific advantages to learning in such an environment. However, results suggest that both groups would prefer to be in Spanish classes with members of their own group rather than in mixed classes. Furthermore, results also show that HLLs perceived their listening and speaking skills to be better than their literacy (reading and writing) skills, while L2Ls self-assessed their receptive skills (reading and listening) to be higher than their productive skills (speaking and writing). This study concludes with a discussion of pedagogical implications.

POSTER: WL&L-03

Teaching Spanish Grammar with the PACE Model in the High School Classroom

David Vazquez
Faculty Mentor: Professor Francisco Salgado-Robles | Department of World Languages and Literatures

A pre- and post-test is conducted to determine whether students' knowledge of grammatical terminology improve throughout a term with the PACE model in a high school Spanish classroom, where a mixed variety of students (second language learners and heritage language learners) coexists. This teaching model not only combines both a communicative and cognitive approach to language instruction, but also introduces a variation on an inductive method of teaching which encourages students to think at a metacognitive level. There was a significant improvement in the understanding of four specific grammatical concepts.

Oral/Paper and Performance Presentations - Student Scholars

STUDENT	FACULTY MENTOR	DEPARTMENT	PRESENTATION ID
Guillaume Courtemanche	Jean-Phillipe Berteau	Physical Therapy	Paper-04
Ashley Dirzis	Simon Reader	English	Paper-05
Laura Grass	Lara Saguisag	English	Paper-01
Ines How-Choong	Jean-Phillipe Berteau	Physical Therapy	Paper-03
Todd Lima	Halil Ege Ozen	Political Science and Global Affairs	Paper-06
Maria Sciortino	Paola Ureni	World Languages and Literatures	Paper-02
Maria Zakharycheva	David Keberle	Performing and Creative Arts	PCA-01

Poster Presentations - Student Scholars

STUDENT	FACULTY MENTOR	DEPARTMENT	PRESENTATION ID
Alexander Ab	Alfred Levine	Engineering and Env. Science	ENS/ESC-13
Siham Abdelqader	El Samuels	Psychology	PSY-08
Baraa Abdelrahmen	Zaghloul Ahmed	Physical Therapy	PHT-04
Yasmeen Abedelwahab	Alfred Levine	Engineering and Env. Science	ENS/ESC-07
Ohiosoje Abraham	Alfred Levine	Engineering and Env. Science	ENS/ESC-07
Briana Ackermann	Judit Kerekes	Curriculum and Instruction	C&I-02
Michael Adejokun	Chang-Hui Shen	Biology	BIO-11
Tristiana Adragna	Florette Cohen	Psychology	PSY-12
Sharfa Ahmad	Michal Kruk	Chemistry	CHM-05
Beatrice Ajayi	Valkiria Duran-Narucki	Psychology	PSY-34
Blossom Akagbosu	Probal Banerjee	Chemistry	CHM-06
Bahira Akramy	Alfred Levine	Engineering and Env. Science	ENS/ESC-09
	Mark Feuer	Engineering and Env. Science	ENS/ESC-10
Keron Alendry	Regina Gonzalez-Lama	Nursing	NRS-09
Joann Ali	Regina Gonzalez-Lama	Nursing	NRS-05
Angelina Allia	Sarah Berger	Psychology	PSY-29
Ellen Arkor Amankwaah	Judit Kerekes	Curriculum and Instruction	C&I-02
Jonnathan Andrade	Alfred Levine	Engineering and Env. Science	ENS/ESC-08
Camilo Aparicio	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-07
Rabana Arif	Hyoung Suk Shim	Accounting and Finance	ACC/FNC-02
Victor Arroyo	Soon Ae Chun	Marketing	MKT-04
Asliddin Asliev	Yumei Huo	Computer Science	CSC-09
Naomi Attuquayefio	Regina Gonzalez-Lama	Nursing	NRS-09
Olivia Ayala	Jason Bishop	English/Linguistics	ENG/LING-04
Gil Barahman	Alan Lyons	Chemistry	CHM-02
Hannah Bareket	Timothy Ricker	Psychology	PSY-30

Poster Presentations - Student Scholars

STUDENT	FACULTY MENTOR	DEPARTMENT	PRESENTATION ID
Guy Bargovsky	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-06
Cody Barshaba	Patricia Brooks, Jessica Brodsky	Psychology	PSY-26
	Patricia Brooks, Jessica Brodsky	Psychology	PSY-27
Hala Basyouni	Aleksandar Haber	Engineering and Env. Science	ENS/ESC-05
Laila Basyouni	Aleksandar Haber	Engineering and Env. Science	ENS/ESC-05
Izabella Beniaminova	Alejandra Alonso	Biology	BIO-08
Toni-Ann Bennett	Ellen-ge Denton	Psychology	PSY-09
Yann-Axel Bertrand	Jean-Philippe Berteau	Physical Therapy	PHT-01
Ethan Binyaminov	Deborah Sturm	Computer Science	CSC-01
Mohammad Bokhari	Abdeslem El Idrissi, Leonard Ciaccio	Biology	BIO-03
Christopher Boromee	Abdeslem El Idrissi	Biology	BIO-04
Nicole Bossert	Barry Sheinkopf	English	ENG-01
Jared Brecher	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-05
Erica Brogna	Cynthia Scarinci	Accounting and Finance	ACC/FNC-01
Conor Buckley	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-13
Lilian Bustillo-Chavez	Regina Gonzalez-Lama	Nursing	NRS-06
Ommiya Butt	Abdeslem El Idrissi	Biology	BIO-01
Daisy Caceres	Regina Gonzalez-Lama	Nursing	NRS-07
Ryan Callaghan	Alan Benimoff	Engineering and Env. Science	ENS/ESC-01
Judeline Came	Ellen-ge Denton	Psychology	PSY-10
Deneisha Campbell	Nancy Liu-Sullivan	Biology	BIO-21
Nelson Caraballo	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-10
Brooke Caradonna-Maltese	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-12
Andrew M. Carlo	Isabel Rechberg	Management	MGT-03
Gloria Carrasco	Judit Kerekes	Curriculum and Instruction	C&I-02
Christina Cerverizzo	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-08
Krystle D. Chapple	Alejandra Alonso	Biology	BIO-05
Chun Xia Chen	Probal Banerjee	Chemistry	CHM-07
Tao Chen	Alfred Levine	Engineering and Env. Science	ENS/ESC-14
Ting Ting Chen	Jane Alexander	Engineering and Env. Science	ENS/ESC-19
	Jane Alexander	Engineering and Env. Science	ENS/ESC-20
Gadrielle Chen	Jane Alexander	Engineering and Env. Science	ENS/ESC-21
William Chen	Regina Gonzalez-Lama	Nursing	NRS-08
Chinnu Cheriyan	Kristen Gillespie-Lynch	Psychology	PSY-19
Lalita Chindarad	Alan Zimmerman	Marketing	MKT-01
Priunka Choudhury	Kristen Gillespie-Lynch	Psychology	PSY-19
Mobin Uddin Chowdhury	Aleksandar Haber	Engineering and Env. Science	ENS/ESC-03

Poster Presentations - Student Scholars

STUDENT	FACULTY MENTOR	DEPARTMENT	PRESENTATION ID
Soukaina Chyat	Sebastien Poget	Chemistry	CHM-12
Gianna Cirrone	Daniel McCloskey	Psychology	PSY-05
Lorenza Colonna	Christina Hagedorn	English/Linguistics	ENG/LING-01
Sean Connor	Xiaowen Zhang	Computer Science	CSC-06
Alexandra Cosenza	Kristen Gillespie-Lynch	Psychology	PSY-20
Marco Biagio Costanza	Ellen-ge Denton	Psychology	PSY-11
Maria Costes	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-07
Christina Craven	Holly Weisberg	Psychology	PSY-16
Nicholas Cuellar	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-08
Danielle Dadona	Alfred Levine	Engineering and Env. Science	ENS/ESC-09
Caryn Darmoni	Timothy Ricker	Psychology	PSY-31
Ismael Dasalla	Regina Gonzalez-Lama	Nursing	NRS-06
Adelina Davi	Bertram Ploog	Psychology	PSY-01
Amanda Davis	Leonard Ciaccio	Biology	BIO-15
Xochitl De La Luz	Francisco Salgado-Robles	World Languages and Literatures	WL&L-01
Kenneth De Young	Nancy Guo, Paolo Cappellari	Marketing	MKT-06
Alicia Defonte	Nancy Liu-Sullivan	Biology	BIO-20
Hrisula Dervishi	Alejandra Alonso	Biology	BIO-09
Emily Destefano	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-09
Brianna Di Stefano	Peter Kabachnik	Political Science and Global Affairs	PSGA-19
Kayla Didonato	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-12
Bousso Diouf	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-09
Ellaesea Domingo	Abdeslem El Idrissi	Biology	BIO-04
	Krishnaswami Raja	Chemistry	CHM-04
Nicholas Dubinsky	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-10
Denis Eder	Florette Cohen	Psychology	PSY-12
Nora Elattar	Deborah Sturm	Computer Science	CSC-02
Adnan Elcharfa	Zaghloul Ahmed	Physical Therapy	PHT-04
Mohamed Elsayed	Alfred Levine	Engineering and Env. Science	ENS/ESC-11
Adaeze Ezeh	Valkiria Duran-Narucki	Psychology	PSY-34
Gaia Fabj	Charles Liu	Physics and Astronomy	PHY/AST-01
Jackline Fahmy	Michal Kruk	Chemistry	CHM-05
Raven Fakoya	Alfred Levine	Engineering and Env. Science	ENS/ESC-09
Steve Falcoz	Jean-Philippe Berteau	Physical Therapy	PHT-02
Frida Fatia	Chang-Hui Shen	Biology	BIO-12
Weicong Feng	Paolo Cappellari Soon Chun	Marketing	MKT-03
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Melissa Finnegan	El Samuels	Psychology	PSY-07
Wai Sum Alzina Fok	Lana Karasik	Psychology	PSY-22
Philip Fonseca	Leora Yetnikoff	Psychology	PSY-23
Carmen Franchesca-Jimenez	Regina Gonzalez-Lama	Nursing	NRS-09
Daniel Furhang	Alan Lyons	Chemistry	CHM-03
Dileepa Galagedera	Jillian Báez	Media Culture	MC-03
Layla Gallardo	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-14
Girolama Gambino	Abdeslem El Idrissi	Biology	BIO-02
Liam Gilbride	David Gerstner	Media Culture	MC-01
Alexis Gorin	Zaghloul Ahmed	Physical Therapy	PHT-04
Ashley Green	Kristen Gillespie-Lynch	Psychology	PSY-21
Marilena Gropatsakis	Alan Zimmerman	Marketing	MKT-02
Maria Guarino	Lisa Manne	Biology	BIO-18
Joseph Gyasi	Jennifer Wagner	Psychology	PSY-17
Mohamed Hammam	Peter Costa	Psychology	PSY-28
Christopher Harris	Natacha Gueorguieva	Computer Science	CSC-04
Alani Harrison	Timothy Ricker	Psychology	PSY-32
Haneen Hegazi	Halil Ege Ozen	Political Science and Global Affairs	PSGA-01
Matthew Henschke	Xiaowen Zhang	Computer Science	CSC-07
Kwan Yee Ho	Valkiria Duran-Narucki	Psychology	PSY-33
Abdonnie Holder	Alejandra Alonso	Biology	BIO-07
Akihiro Honda	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-11
Miguel A. Hurtado	Aleksandar Haber	Engineering and Env. Science	ENS/ESC-06
Yasmine Hussein	Halil Ege Ozen	Political Science and Global Affairs	PSGA-02
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Samantha Iervolino	Danna Curcio	Nursing	NRS-03
Kiran Imtiaz	Bertram Ploog	Psychology	PSY-02
Faith James	Kristen Gillespie-Lynch	Psychology	PSY-20
Haaziq Jawed	Chang-Hui Shen	Biology	BIO-11
ChenJing Jiang	Isabel Rechberg	Management	MGT-04
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Mafanta Kajakhe	Daniel McCloskey	Psychology	PSY-06
Daniel Kallini	Florette Cohen	Psychology	PSY-14
George Kaluski	Chang-Hui Shen	Biology	BIO-12
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Chantel Krampah	Ellen-ge Denton	Psychology	PSY-10
Samuel Krichavets	Alan Lyons	Chemistry	CHM-02
Deniz Kuci	Rupal Gupta	Chemistry	CHM-09
Steeve Labonte	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-11
Daniel Ladner	Yumei Huo	Computer Science	CSC-08
Oralia Lainez	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-14
Vitaliy Lasiychuk	Probal Banerjee	Chemistry	CHM-07
Arshia K. Lodhi	Patricia Brooks Jessica Brodsky	Psychology	PSY-26
	Patricia Brooks Jessica Brodsky	Psychology	PSY-27
Cassandra LoFaro	Edward Miller	Media Culture	MC-02
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	Dwight Richards	Engineering and Env. Science	ENS/ESC-17
Si Ying Ma Liu	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-16
Comfort Majekodunmi	Regina Gonzalez-Lama	Nursing	NRS-06
Malika Makhsudova	Abdeslem El Idrissi Leonard Ciaccio	Biology	BIO-03
Michele Mallette	Regina Gonzalez-Lama	Nursing	NRS-05
Andrii Mamchyn	Abdeslem El Idrissi	Biology	BIO-04
Lisa Manitta	Jean-Philippe Berteau	Physical Therapy	PHT-03
Gianna Marchisella	Rupal Gupta	Chemistry	CHM-10
Vianna Mark	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-15
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Megan McEwan	Jillian Báez	Media Culture	MC-04
Luke McNamara	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-13
Yasmine Mechalikh	Alejandra Alonso	Biology	BIO-10
Marina Michail	Florette Cohen	Psychology	PSY-14
Andrew Minew	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-12
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Adam Moreira	Nancy Liu-Sullivan	Biology	BIO-21
Salvatore Mosomillo	Kristen Gillespie-Lynch	Psychology	PSY-21
Joseph Mule	Sebastien Poget	Chemistry	CHM-11
Radini Munaweera	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-16

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Begzodjon Musaev	Abdeslem El Idrissi	Biology	BIO-01
Marina Nashed	Florette Cohen	Psychology	PSY-13
Sathis Niranchchan	Nancy Liu-Sullivan	Biology	BIO-21
Konstantin Novichenko	Deborah Sturm	Computer Science	CSC-03
Brendali Nunez	Leora Yetnikoff	Psychology	PSY-24
Adjoankoa Nyameh	Regina Gonzalez-Lama	Nursing	NRS-09
Abnerson Ocampo	Soon Chun	Marketing	MKT-05
Danielle Ohana	Alan Lyons	Chemistry	CHM-02
Mary Jane Olsen	Regina Gonzalez-Lama	Nursing	NRS-05
Yenni Ortega	Nancy Liu-Sullivan	Biology	BIO-21
Jerry Ortiz	Charles Liu	Physics and Astronomy	PHY/AST-02
Ariene Ouedraogo	Probal Banerjee	Chemistry	CHM-06
Miguel Pabon	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-17
Janice Parikh	Lara Saguisag	English	ENG-02
Michael Pataffi	Vinay Vaishampayan	Engineering and Env. Science	ENS/ESC-22
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Francesco Pecora	Aleksandar Haber	Engineering and Env. Science	ENS/ESC-04
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Elizabeth Perez	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-11
Estephany Picazo	Alejandra Alonso	Biology	BIO-06
Louis Pimpinella	Alan Lyons	Chemistry	CHM-01
Nataliya Pinyuk	Bertram Ploog	Psychology	PSY-02
Isabel Pisakhova	Daniel Kaplin	Psychology	PSY-03
Corey Plate	Daniel McCloskey	Psychology	PSY-04
Michael Proscia	Isabel Rechberg	Management	MGT-05
Carolina Puertas	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-18
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Howard Ray	Regina Gonzalez-Lama	Nursing	NRS-09
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Alex Reems	Regina Gonzalez-Lama	Nursing	NRS-10
Ariel Rivera	Abdeslem El Idrissi	Biology	BIO-02
Lidya Rizkalla	Florette Cohen	Psychology	PSY-14
Stephanie Rizzo	Regina Gonzalez-Lama	Nursing	NRS-06
Everett Rodriguez	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-08
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Jack Rogers	Sebastien Poget	Chemistry	CHM-13

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Jessica Salerno	Barbara Schiano	Nursing	NRS-01
Nana Samake	Leonard Ciaccio	Biology	BIO-17
Joshua Santana	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-05
Danielle Savino	Leora Yetnikoff	Psychology	PSY-25
Nicholas Shagiri	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-05
Arouje Shaikh	Nancy Liu-Sullivan	Biology	BIO-21
Stacy Shapiro	Greg Phillips	Biology	BIO-13
Clayton Shaw	Leonard Ciaccio	Biology	BIO-16
Miriam Shmueli	Chandan Acharya	Management	MGT-01
Marwa Shueib	Valkiria Duran-Narucki	Psychology	PSY-34
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Patrick Tayag	Regina Gonzalez-Lama	Nursing	NRS-04
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Veronica Valdivieso	Chang-Hui Shen	Biology	BIO-12
Richard Valiente	Halil Ege Ozen	Political Science and Global Affairs	PSGA-03
Frank Vargas	Alfred Levine	Engineering and Env. Science	ENS/ESC-16
	Dwight Richards	Engineering and Env. Science	ENS/ESC-17
David Vazquez	Francisco Salgado-Robles	World Languages and Literatures	WL&L-03
Dejon Virgo	Jane Marcus Delgado	Political Science and Global Affairs	PSGA-16
Kailey Volpetti	Florette Cohen	Psychology	PSY-15
Laura Wetz	Barbara Schiano	Nursing	NRS-02
Justin Winn	Zhanyang Zhang	Computer Science	CSC-10
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Nicole Yohrling	Regina Gonzalez-Lama	Nursing	NRS-12
Lauren Zaluk	Dwight Richards	Engineering and Env. Science	ENS/ESC-18
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Sylwester Zawada	Regina Gonzalez-Lama	Nursing	NRS-06
Corey Zhong	William Wallace	Biology	BIO-22

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	Leonard Ciaccio	BIO-03, BIO-15, BIO-16, BIO-17
	Abdeslem El Idrissi	BIO-01, BIO-02, BIO-03, BIO-04
	Nancy Liu-Sullivan	BIO-20, BIO-21
	Lisa Manne	BIO-18, BIO-19
	Greg Phillips	BIO-13, BIO-14
	Chang-Hui Shen	BIO-11, BIO-12
	William Wallace	BIO-22
Chemistry	Probal Banerjee	CHM-06, CHM-07
	Rupal Gupta	CHM-08, CHM-09, CHM-10
	Michal Kruk	CHM-05
	Alan Lyons	CHM-01, CHM-02, CHM-03
	Sebastien Poget	CHM-11, CHM-12, CHM-13
	Krishnaswami Raja	CHM-04
Computer Science	Natacha Gueorguieva	CSC-04
	Yumei Huo	CSC-08, CSC-09
	Deborah Sturm	CSC-01, CSC-02, CSC-03
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	Zhanyang Zhang	CSC-10
Curriculum and Instruction	Judit Kerekes	C&I-01, C&I-02
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	Lara Saguisag	ENG-02, Paper-01
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Marketing	Soon Ae Chun	MKT-03, MKT-04, MKT-05
	Paolo Cappellari	MKT-03, MKT-06
	Nancy Guo	MKT-06
	Alan Zimmerman	MKT-01, MKT-02
Media Culture	Jillian Báez	MC-03, MC-04
	David Gerstner	MC-01
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Nursing	Danna Curcio	NRS-03
	Regina Gonzalez-Lama	NRS-04, NRS-05, NRS-06, NRS-07, NRS-08, NRS-09, NRS-10, NRS-11, NRS-12
	Barbara Schiano	NRS-01, NRS-02
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Physical Therapy	Zaghloul Ahmed	PHT-04
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Political Science and Global Affairs	James Falkin	PSGA-04
	Peter Kabachnik	PSGA-19
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	Halil Ege Ozen	PSGA-01, PSGA-02, PSGA-03, Paper-06
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	Jessica Brodsky	PSY-26, PSY-27
	Patricia Brooks	PSY-26, PSY-27
	Florette Cohen	PSY-12, PSY-13, PSY-14, PSY-15
	Peter Costa	PSY-28
	Ellen-ge Denton	PSY-09, PSY-10, PSY-11
	Valkiria Duran-Narucki	PSY-33, PSY-34
	Kristen Gillespie-Lynch	PSY-19, PSY-20, PSY-21
	Daniel Kaplin	PSY-03
	Lana Karasik	PSY-22
	Daniel McCloskey	PSY-04, PSY-05, PSY-06

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	Timothy Ricker	PSY-30, PSY-31, PSY-32
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	Jennifer Wagner	PSY-17, PSY-18
	Holly Weisberg	PSY-16
	Leora Yetnikoff	PSY-23, PSY-24, PSY-25
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