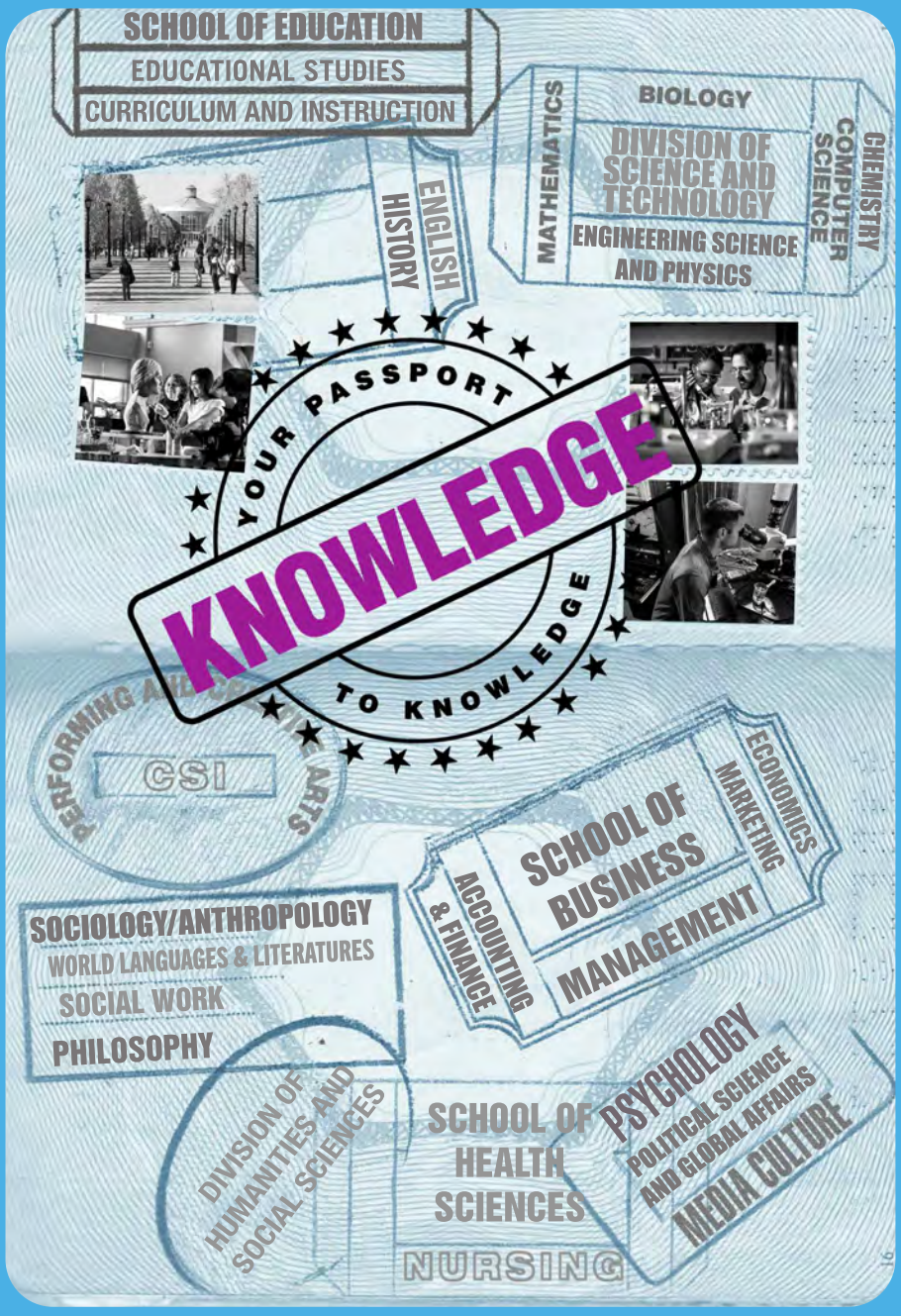
CSI UNDERGRADUATE CONFERENCE ON RESEARCH, SCHOLARSHIP, AND PERFORMANCE

THURSDAY, APRIL 26, 2018



THE CITY UNIVERSITY OF NEW YORK
College of Staten Island

CSI UNDERGRADUATE CONFERENCE ON RESEARCH, SCHOLARSHIP, AND PERFORMANCE*

Thursday, April 26, 2018
Center for the Arts, 1P-Atrium
11:00am – 4:30pm

*Sponsored by the Division of Academic Affairs with funding from

THE CITY UNIVERSITY OF NEW YORK College of Staten Island ALUMNI

STUDENT GOVERNMENT SG COLLEGE OF STATEN ISLAND

THE CITY UNIVERSITY OF NEW YORK College of Staten Island FOUNDATION, INC.

CSI Undergraduate Conference on Research, Scholarship, and Performance 2018

Conference Schedule—Thursday, April 26, 2018

11:30am–Noon	CSI Chamber Music Recital Recital Hall 1P-120
Noon–4:30pm	The Art Gallery of the College of Staten Island, 1P-112 • *Lighting the Past: A solo exhibition of sculpture and monotypes* by Associate Professor of Sculpture, Marianne Weil
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 Dr. William Fritz, President, College of Staten Island • Keynote Address: Katie Cumiskey, PhD Department of Psychology, College of Staten Island "The Future is (Ir)Rational: Science, Technology and Imagination" • Duo for Two Violins in Sixth Tones, Op. 49 Alois Haba (1893-1973) I. Allegro moderato II. Andante cantabile III. Moderato cantabile Dan Auerbach, violin I Jialing Deng, violin II
2:15pm-4:15pm	Poster Presentations 1P Atrium, East and West Lounges
2:30pm-3:30pm	Music Hour Recital Recital Hall 1P-120 Featuring original student arrangements performed by the CSI Jazz Ensemble directed by Michael Morreale
2:30pm-4:30pm	CSI Student Art Exhibitions Student Art Gallery, 1P-118B CFA Atrium, Glass Case
3:30pm-4:30pm	Paper Presentations 1P Lecture Hall

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 17th Undergraduate Conference on Research, Scholarship, and Performance.

This annual event is a highlight of our academic calendar, showcasing the depth and breadth of the talent of CSI students. It also provides an opportunity for us to acknowledge the world-class faculty at CSI who have mentored the students whose work is on display 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, as well as with their mentors. We know that these opportunities often have life-changing consequences, influencing career choices and establishing the foundational steps in future careers in research, scholarship, or performance. Among our student presenters today are some who have already won awards or been selected to participate in national competitions and conferences. Many more will do so in the future. 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 Office of Research, the CSI Alumni Association, and the CSI Student Government have generously supported this conference, and many students received support through the Undergraduate Research Awards sponsored by the CSI Foundation and CUNY's Coordinated Undergraduate Education (CUE) program. 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,

WJFritz

William J. Fritz
President

THE DEPARTMENT OF
PERFORMING AND CREATIVE ARTS

PRESENTS

AN ART AND MUSIC EXPOSITION

at

the 17th 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, April 26, 2018

RECITAL HALL, 1P-120

CSI CHAMBER MUSIC RECITAL

11:30am – Noon

This program features CSI Chamber Music Students under the direction of Dr. Dan Auerbach as well as 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 and Prof. Peter Prisco will be featured.

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

Program

Deux Interludes.....Jacques Ibert (1890-1962)

I. Andante espressivo
II. Allegro vivo

Madisen Cutler, flute
Dan Auerbach, violin
Xingru Duan, piano

Invention No 5 in Eb major .....Johann Sebastian Bach (1685-1750)

Lesly Decastro, piano

Tell Me a Bedtime Story .....Herbie Hancock (b. 1940)

Christopher Gonzalez, guitar Michael Morreale, piano

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

LIGHTING THE PAST: A Solo exhibition of sculpture and monotypes
by Associate Professor of Sculpture, Marianne Weil

Noon – 4:30pm

Curator: Prof. Miguel A. Aragon, Asst. Professor in Printmaking

Artist **Marianne Weil**, Associate Professor of Sculpture at the City University of New York, College of Staten Island, received her B.A. (sculpture) from Goddard College, VT and M.F.A. (Sculpture) from the School of Visual Arts, NYC. She continued her studio training with apprenticeships to foundry artisans and stone carvers in Pietrasanta, Italy. While on recent sabbatical, Weil collaborated with the American School of Classical Studies in Athens, Greece, to pursue field research for several studio projects (fall 2016) and was guest artist at the Emily Harvey Foundation, Venice, Italy to develop new glass work in Murano (spring 2017). Her latest exhibitions include: ILLE Arts, Amagansett, NY (2017); the Ormond Beach Art Museum, FL (2017); *Artist Choose Artists*, Parrish Museum, Southampton, NY (2016); *LI Biennial*, Heckscher Museum of Art, Huntington, NY (2016).

Awards, grants and residencies include: several MacDowell Colony Fellowships, an Adolph & Esther Gottlieb Foundation Grant, Hospitalfield Trust award, Tyrone Guthrie Centre Fellowship, Fondaçion Valparaiso Grant, Casa de Mateus Foundation and a New York State Council for the Arts, *Community Connection Grant* for a public art installation for the Village of Greenport, New York. A bronze commission for the Village of Water Mill, New York in collaboration with the Order of the Sisters of St. Dominic is installed on the Water Mill Village Green, NY. Weil has received five PSC-CUNY research awards for her creative scholarship combining glass and bronze and two travel awards from the CUNY Academy for the Humanities and Sciences.

Publications featuring Weil's work include: *Art in America, Art News, Women's Art Journal, the Huffington Post, the Brooklyn Rail, Glass Quarterly, Sculpture Magazine, the NY Times, Geo Magazine, Sculptural Pursuit Magazine and the International Herald Tribune* Weil is represented by ILLE Arts, Amagansett, New York; her sculpture and prints are included in public and private collections here and abroad.

WILLIAMSON THEATRE 1P-111

PLENARY SESSION
1:00pm – 2:00pm

Performance section

This program features CSI Chamber Music student, Jialing Deng, violin. Ms. Deng has been coaching with Dr. Auerbach, at CSI as well as with Johnny Reinhard, the director of the American Festival of Microtonal Music (AFMM), having received an Undergraduate Research Fellowship to research microtonal music. Ms. Deng has been so successful at learning this genre that she was invited to participate in professional concerts of AFMM in 2018. Ms. Deng also received an Arts in the Classroom Grant from the Research Foundation to supplement her research on microtonality. This semester, Jialing both mastered works by Haba, a 20th Century microtonalist, as well as researched the subject of temperament, the study of various tuning systems.

Duo for Two Violins in Sixth Tones, Op. 49 .....Alois Haba (1893-1973)

I. Allegro moderato

II. Andante cantabile

IV. Moderato cantabile

Dan Auerbach, violin I, Jialing Deng, violin II

RECITAL HALL 1P-120

MUSIC HOUR RECITAL

2:30pm – 3:30pm

This program will feature Graduating Senior Matthew Weitzman in preparation for his Senior Recital which will be held May 8th at 7:30 PM in the Recital Hall. This is a culmination of Matthew's study in CSI's Young Artists Program and his work with his teacher, Prof. Elena Heimur. Matthew will be accompanied by Dr. William Bauer. One of his pieces will include a piece by composer Richard Hundley, whose beautiful art song compositions and past workshops at CSI will always be a treasured living memory for the CSI Music Program.

O del mio dolce ardor .....Christoph Willibald Gluck (1714-1787)

Waterbird .....Richard Hundley (1931-2018)

Matthew Weitzman, tenor Dr. William Bauer, piano

The second half of the program will feature the arranging students from CSI's Jazz Program presenting works in progress from studies in Arranging for Jazz Ensemble taught by Prof. Michael Morreale. These works will be realized by the CSI Jazz Ensemble, under Prof. Morrreale's direction. Also being performed will be arrangements by Vanig Hovsepian (aka Turk Van Lake), a Staten Island native whose centennial is being celebrated this year. Prof. Hovsepian was an instructor in CSI's music Program for 23 years. As Turk Van Lake he was a well-known guitarist and arranger who wrote for the orchestras of Count Basie and Dizzy Gillespie and also wrote and toured with Benny Goodman and Charlie Barnett.

PROGRAM TO INCLUDE

Heaven (First Concert of Sacred Music) .....Duke Ellington, arranged Turk Van Lake

Wig Wise .....Duke Ellington, arranged Turk Van Lake

I Got Rhythm + 4 .....George Gershwin, arranged Turk Van Lake

THE CSI JAZZ ENSEMBLE

Directed by Michael Morreale

Thomas Aquino – drums, Courtney Cayton – alto saxophone
Angelina D'Aquino – trumpet, Lesly Decastro – trombone, Alfred DeRosa – piano
Christopher Gonzales – guitar, Kyle Henry – alto saxophone, Joel Kasparian – electric bass
Mauricio Lopez – trumpet, Christian Nathaniel – piano, Matt Parenti – drums
David Peralta – guitar, Adam Raden – guitar, Brian Raleigh – piano, Ruber Simbana – drums
Sophia Sparnroft – contra bass, voice, Joseph Weisberg – tenor saxophone

CFA ATRIUM, THE GLASS CASE

CO-CURATORS OF THE UNDERGRADUATE RESEARCH CONFERENCE ART EXHIBITION

2:30pm – 4:30pm

Faculty advisor: Professor Marianne Weil, Associate Professor of Sculpture

Multiples: employing multiple copies of a singular object, Intermediate Sculpture/ART 250, created sculptures that address either a political, social or personal commentary. From the original clay prototype, each student made a rubber mold to cast at least six multiples from materials--including: resin, plaster and wax.

Dana Ballantoni
Akira Campbell
Rhyan Concepcion
Beyza Donmez
Courtney Dowling
Angelica Fontana
Dominique Harris
Natalie Liebovici
Evinnie Moran
Anette Pazdry
John Ricciardi
Margaret Rowan
Simond Zhen

Special Projects in Sculpture:

Alisha Monsalvo, welded steel sculpture
Shianne Archer: Plaster and wood

CSI STUDENT ART GALLERY 1P-118B

UNDERGRADUATE RESEARCH CONFERENCE EXHIBITION

2:30 pm – 4:30 pm

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 & Photo majors: Liana Capuana, Jackson Neil, and George Kantzia

Faculty advisor: Professor Marianne Weil, Associate Professor of Sculpture

Matt Hogan
Alzina Fok
Jordan Ottrando
Alisha Monsalvo
Jay Antoine
Tea Amato
Jenny Li
Adianna Nay Chow
Regan Schaal
Ronald Panzella
Gabriella Iacono
Liana Capuana
Courtney Dowling
Gary Pizzolo
Darlene Livingston
Summer Naanaa
Kelly Guevara
Mungnia
Abdul Samih
Victor Ketegou
Sam Tirado
Sergey Milovanov
Amany Alkayyall
Natalie Leibovici
Dana Butera
Denfeng Qiu
James Macaluso
Jordyn Valvik
Nena Nadeem
Imani Hallowell
John Rizzo
Vivian Otero
Nicholas Vega
Rachel Sanchez
Firyal Mehr
Margaret Rowan
Daniel Dorsey

RESEARCH PAPER PRESENTATIONS

CENTER FOR THE ARTS
3:30PM - 4:30PM

1P-Lecture Hall
3:30pm – 4:30pm

PAPER #2

Decadentism in Gabriele D'Annunzio and Oscar Wilde

Catharina Carone

Faculty Mentor: Professor Chiara Ferrari
Department of World Languages and Literature

The paper is an in-depth analysis of Decadentism and how it influenced European literature at the turn of the century. It will focus on two very different works to show the broad spectrum of decadent writing. The goal is to compare and understand the themes presented such as the Ubermensch and the Medusa complex, the role of women in connection to the protagonists, the meticulous description of settings, and the motivations of the protagonists.

Philosophical works will be used to reach a deeper understanding of characteristics and behaviors as well as to support the arguments made throughout the essay. Decadentism was not only a literary movement, but also a way of upholding the ideal of the upper class privilege. Especially the first work shows a resistance to adapt or accept change. Decadentism's traits and nuances will be highlighted throughout the essay by referencing the specific works. The metaphors will be analyzed through the lenses of Nietzsche and Freud to shed light on the psychology behind the narrative portrayal of the protagonists. The paper will focus on the writing style in relation to settings and characters, the philosophical and psychological influences that were brought to bear by the authors and the historical background of the fictional works.

PAPER #1

Enhancing the Quality of Health Care for Transgender Veterans: The Trump Tenure and Beyond

Nadia Davis

Faculty Mentor: Esther Son
Department of Social Work

This research is a qualitative study that highlights the barriers to quality health care for transgender veterans and the importance of evaluating the success of the interventions employed to discourage these barriers. My research question is “How do culturally competent interventions help to decrease barriers to health care for transgender veterans?” An assessment of the accomplishments and shortcomings of such interventions from the viewpoint of members of the VHA staff will provide practical recommendations and resolutions to enhance the treatment transgender veterans receive.

Undoubtedly, the relationship between this population (VHA staff) and transgender veterans is instructive since it is characterized by direct contact and close/personal interactions. Generally, the objective of the study is to encourage proactive involvement of VHA caregivers in the decision making processes and implementation of interventions or programs to improve health care services that they provide. I will conduct interviews with at least 7 VHA staff members in order to ascertain their unique and individual opinions and suggestions to advance the goal of the study. The constructive criticisms and analyses derived from conversations with caregivers will also inform advocacy strategies and intercessions that social workers can argue for this population at the micro, mezzo and macro levels.

PAPER #3

Renaissance Women in Italy

Elaine Minew

Faculty Mentor: Gerry Milligan
Department of World Languages and Literature

The role of women was a central topic of discussion during the Italian Renaissance. Writers such as Francesco Barbaro (1390-1454), Leon Battista Alberti (1404-1472) and Baldassare Castiglione (1478-1529) provided prescriptive accounts of women in their roles as daughters, wives and court ladies. This research focuses on the Renaissance woman's performance of her varying roles in society as carefully delineated by her male counterparts in society. These writings by men circumscribed women's actions, dress, piety, and sexuality to an extent that performing ideal womanhood required a careful balance of impossible contradictions. What my research will show is that women of the Renaissance were not mere pawns of men's dictates but agents in their own right, Machiavellian masters of the self. Their carefully crafted demeanor paired with choice words and actions enabled them to navigate the demands society put on them. This research of the works of famous Renaissance writers will examine how these women performed within court, the home and the church.

PAPER #4

Abundance of Population III Galaxies

Jerry Ortiz

Faculty Mentor: Professor Emily Rice
Department of Engineering Science and Physics

Population III (Pop III) stars contain essentially no metals (elements heavier than hydrogen and helium) and are believed to form most prominently at high redshifts, due to the low abundance of metals present. As of yet, these stars have not been observed; predictions about Pop III stars have been made using cosmological hydrodynamical simulations. Pop III stars are expected to form in ~10^5 to ~10^6 solar mass minihalos, which would be very difficult to observe due the small available gas content for stars to form. Within the halo, if the all star formation could be delayed to allow more mass to collect, the Pop III stars in the halo would be more easily observable.

In this talk, I will discuss how ionizing radiation from nearby galaxies can delay the formation of stars in a pristine halo. This delay can be achieved through photoheating, which delays the collapse of gas within the halo. To study the likelihood of this effect, we analyzed the flux on halos using a cosmological N-body simulation with a box length of 20 Mpc. At z ~ 5, no pristine halos within the simulation received a flux high enough for their star formation to be substantially delayed. Thus, with the volume used, halos containing massive Pop III stars at z ~ 5 would not form. This suggests that Pop III stars within massive halos may only be found near very bright galaxies formed at high redshift, which would require a larger simulation volume to be studied.

PAPER #5

Moral Anti-Realism: The Challenge of Free Will & Evolutionary Ethics, and a Positive Course of Action

Vincent Quercia

Faculty Mentor: Professor Stephen Morris
Department of Philosophy

Given the central role that morality plays in guiding people's interactions with one another as well as how it provides the very foundations of human society, it can be argued, in terms of practicality, that one of the chief aims of philosophy is to equip an agent with the ability to differentiate between good and evil. However, our ability to better discern the nature of good and evil is complicated by the fact that traditional morality, I will argue, is susceptible to several attacks that recommend taking a skeptical attitude towards moral properties. This presentation will consist of two objections to moral realism, which seem to strengthen the moral antirealist's position. The first of these concerns free will, or rather, what I will argue, is a lack thereof. Free will is generally regarded as the control condition of moral responsibility.

From this perspective, which I will be adopting in this essay, if free will does not exist for human beings then people could not be morally responsible in the traditional sense. Another way of putting this is that the impossibility of free will for human beings would establish that there are no moral properties that relate to either human agents or actions. The second challenge facing moral realism I will discuss stems from contemporary accounts of evolutionary ethics. More specifically, I will argue, a la Michael Ruse, that morality is merely an evolutionary adaptation; and therefore, does not correspond with any metaphysical moral truths. If my points hold, the conjunction of these two objections provide a compelling case to, at the very least, reexamine our traditional conception of morality under a more critical lens. The final section of the presentation provides alternate grounds to structure society in a meaningful way without moral realism. One of the suggestions I promote is grounded in the notion of empathy. The other alternative I support is an appeal to enlightened self-interested in terms of a form of social contract theory. I believe that these two possibilities provide an optimistic scaffold upon which we could construct a more pro-social society than the one moral realism leads us to.

PAPER #6

Tuning drums

Nardeen Eskaros and John Vasquez

Faculty Mentor: Professor Alfred Levine
Department of Engineering Science and Physics

Our project is about tuning drums and explains how to get the correct frequency on all sides of the drums.

RESEARCH POSTER PRESENTATIONS

CENTER FOR THE ARTS
ATRIUM
2:15PM - 4:15PM

Poster Location by Department

Accounting and Finance .....Bottom Front
Biology .....East Lounge
Chemistry .....East Lounge
Computer Science .....West Lounge
Curriculum and Instruction .....West Lounge Walkway
Economics .....Bottom Front
Engineering Science and Physics .....Bottom Front
English .....West Lounge Walkway
English/Linguistics .....West Lounge Walkway
GIS Services .....Bottom Back
Management .....Bottom Front
Marketing .....Bottom Front
Mathematics .....Bottom Back
Media Culture .....West Lounge
Nursing .....Bottom Back
Performing and Creative Arts .....West Lounge Walkway
Physical Therapy .....West Lounge
Political Science and Global Affairs ..... West Lounge Walkway
Psychology .....Bottom Center
Social Work .....Bottom Back

ACCOUNTING AND FINANCE

CONFERENCE LOCATION:
BOTTOM FRONT

POSTER #7

The Tax Cuts and Jobs Act: What it Means for Families with Children

Alyssa Caccavale (The Verrazano School)

Faculty Mentor: Professor Deborah Brickman
Department of Accounting and Finance

On December 22, 2017, the Tax Cuts and Jobs Act (TCJA), the first significant tax legislation reform since 1986, was passed and signed into law by President Trump. This bill made numerous changes that will impact individual and corporate tax returns. The purpose of this paper is to analyze and understand the impacts of the new legislation on families with children.

Specifically, it will focus on how the TCJA revisions, such as the Child Tax Credit increase and the elimination of the personal and dependent exemptions, affect taxpayers with children. The majority of the provisions from the TCJA go into effect on January 1, 2018 and end in 2027. According to the Tax Foundation, "the nation's leading independent tax policy research organization," the tax cuts will result in a loss of about $1.5 trillion in tax revenue. Even though that is an enormous amount of money, the majority of that revenue is coming from the corporate income tax cuts. Individual taxpayers with children will not see a major difference in the amount of their tax liability. Since the revisions are set to expire in 2027, families with children in the middle to low-income tax bracket will either see a small increase in their federal refund or they will owe more money to the government. For the Tax Cuts and Jobs Act, working families will see some tax benefits in the first few years, however, by 2027, their tax benefits will decrease. By analyzing statistical data from this year and comparing it to prior years, it will become clear whether working taxpayers will truly benefit from the passing of the Tax Cuts and Jobs Act.

POSTER #123

How Forensic Accounting helps the FBI

Michael Cannizzaro

Faculty Mentor: Professor Patricia Galletta
Department of Accounting and Finance

My paper will focus on how forensic accountants help the FBI. Forensic accounting is a specialty practice that uses accounting, auditing and investigative skills to conduct an examination into a company's financial statements, bank statements and credit statements. Earning professional certifications such as Certified Forensic Investigation Professional (CFIP), Certified Forensic Accountant (CRFAC), Certified Forensic Accounting Professionals (CFAP), Certified Fraud Examiner (CFE), Certified in Financial Forensics (CFF), Certified Valuation Analyst (CVA), and Chartered Certified Forensic Accountant (CCFA) will help to improve the skills needed by a forensic accountant. The FBI often looks for one or more of these certifications when hiring forensic accountants.

I will use statistics, surveys and review some famous court cases such as the Al Capone, Joseph Massino, Enron and AIG cases to analyze how forensic accounting helps the FBI. At the end of my research, I will expect to find how forensic accounting helps the FBI in high profile cases. Accounting is imperative to society and a focus on forensic accounting shows how it helps people by solving these cases and assisting the FBI.

POSTER #14

Baseball the Business - Building a Champion

Eric Cundari (The Verrazano School)

Faculty Mentor: Professor Deborah Brickman
Department of Accounting and Finance

For years the struggling New York Mets have been attempting to rebuild their team with a goal of winning the World Series. Since the time the team had won the series back in 1986, they have only been back to the fall classic twice, losing both times. Since the start of their rebuilding in 2011, one can look back to see how far the Mets have come and to see where they are headed in the future.

Coming into 2017, the New York Mets had hopes of making it all the way back to the fall classic and winning the World Series. When spring training began last March, the team looked ready to go. However, none of that came to fruition for the NY Mets whose season was really doomed from the start. The great depth that defined the Mets in spring training seemed to evaporate. Playing so poorly, the team decided to sell off many of their pending free agents. This allowed the Mets to try out some of their potential future stars to see how they would perform. Trying out this young talent was considered to be the most positive aspect to come out of the lost season. It was thought that the outstanding performance of two young players would help them 'right the ship' in 2018.

This paper will provide a SWOT (strengths, weaknesses, opportunities and threats) analysis of the current Mets organization. It will explore the Mets current financial situation and delve into the management principles needed to successfully create a champion. It will explore a number of past strategic decisions made and the impact they have had on the organization as a whole. This paper will provide suggestions for the best path the organization could take moving forward in 2018 and beyond.

POSTER #122

Boosting the Productivity of Employees: How It Leads To Great Management

Nicholas Esposito (The Verrazano School)

Faculty Mentor: Professor Deborah Brickman
Department of Accounting and Finance

For any company, employees are a valuable asset. They are a key factor in allowing any company to be successful. Being as vital as employees are, companies want their employees to put their full effort into being productive. Thus, it is up to management to examine their employees' effectiveness, and determine how they can increase their overall output for the company. This study will be primarily focused on productivity, and how it is influenced by management. First, I will provide a brief overview of productivity and provide how it is determined for different types of companies (sales, manufacturing, service, etc.). Following that, the main causes and effects of low-level productivity will be examined. This section will focus on each potential cause of low-level productivity, and going into depth on why they are an issue for productivity. Next, the paper will examine what management needs to do in order to boost employee productivity levels. This portion will primarily be looking into what actions are necessary from management for each issue examined. Finally, this paper will look into how management can maintain higher levels of productivity, and the overall benefits that increased productivity bring for a company. In regards to research, information will be collected mostly through previous case studies referring to productivity. There will also be a smaller focus on briefly looking into different companies and fields of work to examine how needs for increasing productivity vary.

POSTER #121

Trump Tax Reform: What is the Impact?

Kristen Gilbride (The Verrazano School)

Faculty Mentor: Professor Patricia Galletta
Department of Accounting and Finance

This paper looks at the potential impacts of the tax plan to be implemented by President Donald Trump and his administration. This incredibly controversial topic will have an impact on millions of American citizens and corporations. While almost every administration brings new changes to the tax code, this is by far the largest and most dramatic overhaul of the tax code. In order to discuss the changes and their impacts, I will begin by giving a brief history of federal income taxes, and then I will be highlighting the major changes and points of interest in the new plan as compared to the current one. Once I have identified the changes, I will be analyzing different articles and journals to determine how the tax changes will affect American taxpayers, from individuals with varied filing statuses to small and large businesses and corporations. With so much federal income coming from income taxes, these large and numerous changes have caused major controversy across the nation. Some have stated that this plan was a good plan, while critics have declared that the plan will only benefit the President and his businesses, and that the plan would increase the national deficit. With a proposed tax reform as large and complex as this one, we must try to determine its effects so we can change the country for the better.

POSTER #146

Data Collected by Forensic Accountants and Ongoing Investigations in Banks and Big Corps.

Aziza Jurabaeva

Faculty Mentor: Professor Max Gottlieb
Department of Accounting and Finance

Under contemporary circumstances of organization activity securing dependable financial information via disclosing financial statement is a generally accepted objective. Numerous financial frauds, from the past, and precisely the beginning of the 21st century, have disrupted the trust and hope of many users of financial information. For instance, Enron Corporation investors have committed falsified financial statements. The responsibility and duty of detecting, investigating and preventing financial statement fraud are in the hands of enterprise's management. The systems of internal auditing, audit committees and internal control are important elements in preventing fraud. The role of forensic accounting and external auditing is performing retrospective financial data control aimed at detecting frauds and omissions and securing the credibility and reliability of financial statements.

The aim of the paper is to discuss the role that collected data by forensic accountants play in the ongoing investigation about fraud. For instance, $3.3 billion was recovered in the result of the healthcare fraud judgments, agreements and additional administrative investigations in the healthcare fraud cases during the Fiscal Year 2016. In addition, identity theft fraud had a $16 billion loss for the consumers in 2016, which is $1 billion more than in 2015. Statistics show that the online shopping fraud lost $1,380,563 in 2016. The application of forensic accountants in investigation is to restore credibility and reliability of the big corporations and banks. In summary, the application of accounting principles and forensics accounting data in investigative procedures help in the detection of financial frauds.

POSTER #8

The Effects of Changes to the Charitable Contribution Tax Deduction

Elizabeth Rassi (The Verrazano School)

Faculty Mentor: Professor Deborah Brickman
Department of Accounting and Finance

For many years some individuals have been proposing a change to the current charitable contribution tax deduction. Proposed changes have evolved due to the need to reduce the federal budget deficit. This paper will explore proposals to change the charitable contribution deduction and discuss the impact these changes would have on individuals and charitable organizations.

Proposed changes include four different methodologies for which an individual may obtain a tax benefit from a donation to charitable organizations; a non itemized deduction, a credit, a cap and a floor. While analyzing these proposals, two important questions will be explored: What impact does the proposed change have on overall giving from individuals, and how does the proposed change impact the charitable organization? Included in this paper will be an examination of previous studies claiming to predict the effects these changes would have on overall charitable giving.

The goal of my research will be to see if it is possible to create a proposal that is revenue neutral for both the government and charitable organizations while being equitable for taxpayers. With the release of President Trump's new tax plan, this paper will discuss the impact to charitable organizations now that most taxpayers will take the standard deduction thereby eliminating their tax benefit for charitable donations.

POSTER #24

Is it the Work of Financial Auditors or the Work of Forensic Accountants?

Angelica Stringer (The Verrazano School)

Faculty Mentor: Professor Deborah Brickman
Department of Accounting and Finance

When the scandals of Enron Inc. and WorldCom broke involving fraud and other irregularities, the finger was pointed at the accountant/auditor who gave these companies a "clean" audit opinion. Upon investigation, many irregularities were uncovered which enabled these companies to conceal their losses and misstate certain financial information. Were these irregularities due to the negligence of the financial auditor or was there a sophisticated scheme in each of these companies which could only have been detected by a forensic accountant?

This paper will explore the similarities and differences between financial auditors and forensic accountants. It will discuss the types of situations that require the expertise of both financial auditors and forensic accountants. The paper will cite specific instances in which fraud and embezzlement were suspected and the type of accountant/auditor needed to detect such activities. Finally, recommendations will be made as to whether and how to incorporate forensic accounting techniques into the general audit function.

BIOLOGY

CONFERENCE LOCATION:
EAST LOUNGE

POSTER #140

Identification of INO80 protein Acetylation

Michael Adejokun

Faculty Mentor: Professor Chang-Hui Shen
Department of Biology

The INO80 complex is a protein believed to be involved in chromatin remodeling of a eukaryotic cell. This protein is involved in the regulation of the INO1 gene, which encodes for inositol. This occurs through acetylation of the histone proteins. Acetylation results in the loosening of the DNA wrapped around histone, eventually exposing the DNA for transcription. In this project, we will be focusing on identifying the amino acid segment of the INO80 that is responsible for the acetylation of histone protein as well as the mechanism of the INO80 and specifically its role in the transcription of the INO1 gene. To prove this theory true, we will be locating the acetylation site of the INO80. If this theory is proven true, an advancement in research could be made to control the production inositol.

POSTER #66

Concanavalin A-PPC Loaded PLGA Microparticles for the Treatment of Cancer

Mohammad Bazrouk (The Verrazano School)

Faculty Mentor: Professor Krishnaswami Raja
Department of Biology

Concanavalin A is a lectin that belongs to the legume family of lectins. Under physiological conditions ConA forms a homotetramer and is capable of binding Ca2+, Mn2+, as well as molecules which contain either mannose or glucose moieties. Aside from its physiological role in its native source (jack bean), ConA has another interesting biological activity that is more pertinent to human health. ConA is able suppress proliferation and induce apoptosis in multiple types of cancer cells. While this activity is promising in vitro, there is one large flaw for porting ConA for treatments in vitro. Being a plant protein it is immunogenic and will most definitely raise an immune response. This immune response would lead to the release of neutralizing antibodies that would nullify the therapeutic effects of ConA.

To make ConA a feasible therapeutic, it must first encapsulated in a suitable delivery system. Poly(lactide-co-glycolide) is a biodegradable polyester and is the one of the most well-characterized materials for the fabrication of microparticles. PLGA microparticles have been shown in the literature to circumvent the shortcomings of many therapeutic agents. Encapsulation of ConA in PLGA microparticles would appear to be facile and straightforward strategy to administer ConA. Since fabrication of PLGA delivery systems always requires use of organic solvents this leads to difficulties in the loading of proteins due to denaturation of aggregation during the fabrication processes. We have pioneered a novel yet straightforward method to stabilize proteins for their subsequent loading into PLGA microparticles without risk of denaturation and aggregation. This strategy allows for the stabilization of the loaded proteins and does not require any alteration to the fabrication of the PLGA microparticles. Stabilization of ConA was determined by fluorescence spectroscopy and dynamic light scattering (DLS). PLGA microparticles were characterized by scanning electron microscopy (SEM) and fourier transform infrared spectroscopy (FTIR). Cytotoxicity of the ConA loaded PLGA microparticles against HeLa cells was evaluated by the MTT assay. Evaluation of different stabilizers on uptake of PLGA microparticles was evaluated by fluorescent live cell imaging.

POSTER #25

An Evaluation of Predator-Prey Relationships Between Naticid Gastropods and Heterodont and Pteriomorph Bivalves

Sara Beardsley-Eide (Macaulay Honors College)

Faculty Mentor: Professor Rebecca Chamberlain
Department of Biology

Predation serves as an important agent of natural selection in ecosystems. Drilling predation, specifically, is often used as a model system to examine the effects of predation by gastropods on the population and distribution of other molluscs and to evaluate evolutionary relationships. When drilling/boring prey, gastropods cover the prey in mucus, envelope it in their mesopodium (middle portion of the foot), and soften prey shells with non-acidic gelatin-like secretions from their accessory boring glands, then use their radula to rasp at the shell/valve mechanically, producing a beveled hole. The predator then inserts its proboscis through the hole and ingests the prey's tissue. Drilling time is directly correlated with shell thickness, and the optimal foraging theory presents the idea that drilling predators have evolved stereotyped drilling behavior over time in that they tend to consume prey with the lowest cost to benefit ratio based on characteristics such as prey size, shell thickness, and predator handling capacity that may limit their drilling effectiveness. It is hypothesized that stereotyped drilling in accordance with the optimal foraging theory serves to increase a predator's fitness because natural selection would tend to favor gastropods that can choose the best prey types and forage optimally, as they would tend to live longer and create more offspring.

Evidence from over 900 specimens of predatory interactions between Pteriomorph and Heterodont bivalves and Naticid gastropods were studied to determine relationships between genus of bivalve, bivalve shell parameters, and lifestyle of the bivalve with drilling frequency by gastropods and location of drilling on the bivalve shell. Valves from 8 different species of bivalve were measured for length, width, height, and thickness using electronic calipers. It was found that, although the apex of the umbo region was found to be the thinnest region of the shell in several bivalve species, gastropod drilling was not always concentrated there and is presumed to be impacted by other factors, such as valve ornamentation and bivalve lifestyle, including defense mechanisms.

POSTER #144

The Effect of Abnormal Tau Protein on Synaptic Proteins and their Expression

Izabella Beniaminova (The Verrazano School)

Faculty Mentor: Professor Alejandra Alonzo
Department of Biology

The Alzheimer's Disease is a neurodegenerative disease that affects memory, learning and behavior. Scientists saw correlation between accumulation of hyperphosphorylated tau protein in the human brain and the progression of AD, so the AD was considered a tauopathy. Tauopathy is a special class of dementias that is associated with aggregation of hyperphosphorylated tau.

Tau protein is a very important protein that stabilizes microtubules, consequently allowing motor proteins to successfully carry messages across the neuron. However, when a lot of hyperphosphorylated tau is present, a decrease in the neural activity can be seen. In our lab, we have developed a new mouse model, which has a gene that expresses pseudophosphorylated tau (PH-Tau) that is modified at regions Ser199, Ser262, Thr212, and Thr23, along with FTDP-17 mutation R406W in mice. The PH-Tau gene is regulated by a tetracycline operon-responsive element (TRE). The trans activator for this gene is expressed in another commercially available transgenic mouse and is expressed only in neurons. To obtain the expression of PH-Tau we need to have a mouse carrying the

two transgenic genes, which can be achieved through mating. The resulting double transgenic mice are grouped into groups containing low levels of PH-Tau, suppressed by doxycycline, (ON) and high levels of PH-Tau, taken off doxycycline, (OFF). The non-transgenic mice of the same age are considered a control group. The polymerase chain reaction (PCR) was used to determine if the mice were double transgenic or not. After the death and fixation of an animal, we stained coronal slices of the brain with antibodies Tau 12 to trace the N-terminus of tau protein and with antibodies for the postsynaptic density protein 95 (PSD95), in the hippocampal CA3 area, the cerebellum and the cerebral cortex. The biochemical characterization showed high levels of the PSD-95 present in the control group and some present in the OFF, but the ON showed little expression of the protein. These results suggest that low levels of PH-Tau can modulate the levels of synaptic protein, therefore neuronal function. Now we use immunohistochemistry to determine the expression of synaptic proteins and changes that are taking place in the presence of abnormal tau.

POSTER #105

Glucose Homeostasis in CSAD KO Mice

Madrona Boutros (The Verrazano School)

Faculty Mentor: Professor Abdeslem El Idrissi
Department of Biology

This study is an elaboration of an experiment done about Taurine and its effects on CSAD KO mice. In this examination, glucose homeostasis and retinal histology in homozygous knockout mice that lack CSAD (CSAD-KO) was analyzed. The mice used were two-month-old male mice, which included wild type (WT), homozygotes with without supplementation of taurine in the drinking water. Our results showed that CSAD-KO and CSAD-KO mice that were treated with taurine were hypoglycemic preceding glucose infusion and demonstrated an altogether diminished plasma glucose contrasted with WT mice. While glucose homeostasis in CSAD-KO was altogether extraordinary contrasted with WT, CSAD-KO supplemented with taurine was without impact.

Examination of retinas by electron microscopy demonstrated that CSAD-KO without taurine supplementation displayed generous retinal degeneration.

Remaining photoreceptor external and inward portions were disrupted. Retinal nuclear and synaptic layers were generally absent and there was evident redesign of the pigmented epithelial cells. These histological distortions were to a great extent redressed by taurine supplementation in the drinking water. In conclusion, data demonstrated that lack of taurine changes glucose homeostasis and retinal structure and taurine supplementation enhances these retinal variations from the norm, however not in hypoglycemia.

POSTER #141

The Effects of pH levels on Lactobacillus Bulgaricus and Streptococcus Thermopphilus

Nicole Dushkin (The Verrazano School), Daniel Krichavets (The Verrazano School), Jaijo Matthew, Hareem Richards

Faculty Mentor: Professor Chang-Hui Shen
Department of Biology

Probiotics have become widely used in the field of medicine. Commonly found in yogurt, many health benefits have been discovered, such as the inhibition of pathogenic growth. Streptococcus Thermophilus and Lactobacillus Bulgaricus are two of the main starter cultures needed for the fermentation of yogurt, and are therefore very big contributors. During the fermentation process,

ethanol is produced, which has proven to serve health benefits when ingested in moderation. With the idea that both ethanol and the bacteria found in yogurt being beneficial when taken in moderation, the proposition that proper amounts of ethanol being incorporated into yogurt has been offered. In order to test the response that the bacteria would provide in the body, it is essential to understand the process of its absorption. When being processed, the body metabolizes the yogurt through the stomach, as well as the small intestine. The varying pH levels of both atmospheres, may affect the responsiveness of the bacteria. The pH levels we will test the two strains of bacteria in will be 2.8 as well as 8, mimicking the environment of the stomach and small intestine, respectively. The objective of this research is study the way these two strains of bacteria react at both pH levels.

POSTER #120

Reversible Clearing of Rat Brains for Interrogation of Histopathology using Visikol HISTO Approach

Xena Flowers

Faculty Mentor: Professor Jeffrey Goodman
Department of Biology

Since the introduction of the CLARITY tissue clearing technique in 2013, interest in tissue clearing techniques and three-dimensional tissue imaging has increased dramatically. While current tissue clearing techniques (CLARITY, iDISCO, Scale, CUBIC) result in highly transparent samples for 3D imaging, these processes irreversibly alter underlying tissue chemistry (e.g. hyperhydration and denaturation of proteins, extraction of lipids and/or cross-linking to polyacrylamide) and result in tissues that cannot be subsequently analyzed by traditional section-based histological processes. As such, these techniques, while showing great promise in an academic setting, cannot be directly validated against the gold-standard histological approaches, and as such have limited scope beyond basic research.

Furthermore, while these techniques have been successfully applied to mouse tissues of all types, difficulty has been reported with rat tissues due to their size and extent of myelination. Many experimental models of epilepsy, stroke and traumatic brain injury are performed in rats, and as such, there exists a need for a histology-preserving tissue-clearing technique suitable for use in rat brains. To this end, the Visikol HISTO clearing technique was employed in conjunction with immunolabeling to obtain three-dimensional image stacks for large sections (>1 mm) and hemispheres of rat tissue highlighting vasculature, neurons, and astrocytes. The distribution of distance to nearest vessel was calculated for neurons and astrocytes. After clearing and imaging, tissues were subsequently un-cleared and sectioned for H&E and Nissl stain, to afford traditional histopathological correlation to 3D datasets.

POSTER #143

Alzheimer's and Diabetes: The Effect of Abnormal Tau on Proteins Related to Glucose Metabolism

Marina Ghobrial (The Verrazano School)

Faculty Mentor: Professor Alejandra Alonzo
Department of Biology

Alzheimer's disease (AD) is a progressive condition that destroys the neuronal connections in the brain, eventually causing the neurons to die. The damage in the brain eventually causes problem with memory, intelligence, judgment, language, and behavior. It has been found that Tau, a microtubule associated protein predominately localized in neuronal axons, can become hyperphosphorylated and eventually lead to AD.

Studies have shown that diabetic individual are 50-100% more at risk for AD and vice versa. Type II diabetes is a metabolic disorder with a pathophysiology of peripheral insulin resistance, excessive hepatic glucose production by the liver and impaired beta-cell secretory function. To understand the connection between AD and Type II diabetes, a mouse model is used to determine how the presence of human Tau affects proteins related to glucose metabolism using an immunohistochemical approach. The mice carry the gene for pseudo-phosphorylated tau (PH-Tau), which is under the control of the tetracycline operon-responsive element (TRE), a trans regulatable element. Doxycycline, an antibiotic, is used to either express or block the production of PH-Tau. When the mice are off doxycycline, the transcription will take place producing PH-Tau. When doxycycline is present, the transcription is blocked, meaning that PH-Tau will not be produced. The mice are perfused and fixed in order to extract the brains and cut coronal slices. These slices are stained with Insulin receptor and Tau, as well as Glucose Transport and Tau, and compared to a control group. I will be presenting preliminary results on the correlation of Insulin receptors and the presence of Tau as well as Glucose transport and Tau.

POSTER #48

Exploring N2A Targeting Drug Synergism Using 3D Cell Culture Model

Monnique Johnson (Macaulay Honors College)

Faculty Mentor: Professor Nancy Liu-Sullivan
Department of Biology

Neuroblastomas are by far the most common cancers affecting infants less than 1-year-old. It accounts for about 6% of all cancers in children. There are about 700 new cases of Neuroblastoma each year in the United States.

Neuroblastomas are cancers that start in the immature nerve cells of the sympathetic nervous system and form into tumors. They can be found anywhere along the nervous system. This cancer can be aggressive because in about 66% of cases it has metastasized to the lymph nodes or to other parts of the body when it is diagnosed. Also, the 5-year survival rate in children in the high-risk group is around 40% to 50%. There are current treatments, which include chemotherapy, stem cell transplants, retinoids, targeted drugs and immunotherapy. The current methods of treatment are not effective enough and it is clear that there are other pathways involved in the proliferation of Neuroblastoma that are not being targeted through current treatments.

TGF-beta is a cytokine known for promoting tumor growth in many cancer types. Previous studies using antibody testing for TGF-beta have found that Neuroblastoma tests positive for TGF-beta 1 and 3 expression. LY compound is a drug currently in clinical trial that inhibits the activation of TGF-beta Receptor 1. However, LY alone is not effective enough as TGF-beta 3 is also expressed. I aim to identify which drugs will synergize with LY to cause a decrease in tumor shrinkage and tumor formation in Neuroblastoma.

POSTER #55

Social Behavior in a Mouse Model of Autism Spectrum Disorder

Ariel Kleydman (Macaulay Honors College)

Faculty Mentor: Professor Kathryn Chadman
Department of Biology

This research focused on autism spectrum disorder (ASD) characterized by impairments in social communication and repetitive behaviors and/or restricted interests. To understand how prenatal exposure to a high fat diet affects behaviors related to ASD in the mouse, tests examined social behavior in the mouse. C57BL/6J mice were a control, while BTBR ItprT+Itpr3tf/J (BTBR) mice were the mouse model of autism. Tests for social behavior included the social approach and social transmission of food preference. Social approach tests the preference for either a stranger mouse or a novel object in a three-chambered apparatus.

The social transmission of food preference (STFP) assesses social interactions, communication and memory. The results for the social approach showed that sociability in B6 mice were not strongly affected by a high fat diet, but HFD BTBR mice became more social than even B6 control mice. BTBR mice prenatally exposed to a high fat diet had more chamber entries; more mouse sniffs, and spent more time in the stranger mouse chamber than all other groups, including the control BTBR mice. This suggests that perinatal exposure to the HFD increased sociability in the BTBR mice, but not in the B6 mice. The results for STFP showed that control mice of both strains ate more cued food, while HFD mice of both strains could not distinguish between cued and uncued food. There was no significance in the number of interactions with the demonstrator mice between either strain or treatment, although there was decreased interaction in the HFD BTBR mice. In terms of climbing on cued and uncued food, there was also no significance; however, the high fat diet affected the B6 mice: they were less able to distinguish between foods. Although both tests are measures of sociability, the high fat diet affected BTBR mice differently in each test. This highlights the need to do more than one test when experimenting with mouse models of autism in order to get a complete picture of a mouse's social behavior.

POSTER #145

Model of Tau Induced Neurodegeneration

Joseph Oreste Longo

Faculty Mentor: Professor Alejandra Alonzo
Department of Biology

Microtubule associated protein tau is a hallmark of the basic structural components of microtubules in our neurons in the central nervous system. It has been shown that this protein is a key component in Alzheimer's disease as well as many other neurodegenerative diseases. Our animal model is showing us the effects of abnormally phosphorylated tau protein (PH-Tau). Naturally, our model did not come easy; as with any animal model acquiring the desired genes needed, it is no easy task. Genetic alterations to our animal's genome were done by means of using highly effective genetic engineering techniques. In breeding our animal model, we continue reproducing the mice carrying the abnormal tau protein. To check the presence of this gene, we need to genotype them. Careful and aseptic technique is applied to obtain a sample of tissue from our mice. After tissues are acquired, we then use alkaline solution to extract deoxyribonucleic acid (DNA). Then to check if the foreign DNA is present, polymerase chain reaction (PCR) is implemented to amplify our extractions from every individual. This process is done twice since we are interested in looking for and obtaining information on the whether the animals can be carrying the gene for PH-Tau and /or the gene for the transactivator. The PH-Tau expression is controlled by tet operator sequence in the promotor of PH-Tau gene (TRE). The transgene for the transactivator (tTA, a tet repressor DNA binding protein) was

purchased from Jackson. Crossing tTA and TRE results in double transgenic mice containing both tTA and TRE. Only animals carrying both genes, TRE and tTA, will express pathological human tau (PH - Tau). Expression of PH-Tau is turned on and off by doxycycline in the diet of the mice. We genotype the pups and from a liter of eight animals, in general, we detect two double transgenic ones. This animal model of double transgenic mice is essential in aggrandizing our knowledge of tau and its role in neurodegenerative diseases.

POSTER #95

Regulation of clustered protocadherin trafficking

Alia Mambetalieva, Yan Mei Nie, Albert Ptashnik, Emily Schnall, Stephanie Maisano, Nicole LaMassa

Faculty Mentor: Professor Greg Phillips
Department of Biology

Clustered protocadherins (Pcdhs) are neural cell adhesion molecules that participate in synaptic and dendritic development. Disruption of these processes can lead to neurodevelopmental disorders. The Pcdhs have an ambiguous effect on cell-cell interaction and it has been challenging to ascertain exactly how Pcdhs affect interacting cells. In some instances, Pcdhs appear to promote the association of membranes, while in other cases the Pcdhs are anti-adhesive and cause avoidance of interacting membranes. It has been found that endogenous and expressed Pcdhs are generally less efficient at targeting to cell junctions and synapses than are classical cadherins. Instead, Pcdhs are prominently sequestered in the endolysosome system or other intracellular compartments. Sequences within the cytoplasmic domains of clustered protocadherins have been mapped that mediate intracellular retention. This segment contains a number of possible regulatory sites, including potential serine phosphorylation and ubiquitination sites, which could affect Pcdh trafficking. We are undertaking structure-function studies to probe the significance of these sites and have identified mutants with altered trafficking. We expect that elaboration of the mechanisms of Pcdh intracellular trafficking will eventually help explain the role of these proteins at the cell surface.

POSTER #51

Assessment of Anxiety in High Fat Diet Maternal Offspring in a Mouse Model of Autism Spectrum Disorder

Patricia Ann Mendoza (Macaulay Honors College)

Faculty Mentor: Professor Kathryn Chadman
Department of Biology

Autism spectrum disorders (ASDs) are neurodevelopmental disorders that affect 1 in 68 children in the United States, but the underlying causes are still unknown. In addition to the characteristic behavioral phenotypes of ASDs, there is also a high prevalence of anxiety among those with ASDs.

Therefore, it important to research more about the etiology of ASDs and its connection to anxiety-like behavior exhibited by those affected with ASDs. Previous research has shown that maternal obesity during pregnancy can influence the development of an ASD, as well as, increase the risk of anxiety and depressive disorders. As a result, a series of behavioral tests were conducted on two inbred strains of mice, C57BL/6J (B6) and a mouse model of ASD, the BTBR T+ Itpr3tf/J (BTBR), to determine if a prenatal high fat diet affects anxiety-like behavior in the offspring. In regards to diet, female BTBR and B6 mice were placed on either a high fat diet or control diet two weeks prior to mating and remained on it until the offspring were weaned. Subsequently, the offspring were assessed for anxiety-like behavior in the elevated plus maze, light-dark box exploration and open field.

Although it was hypothesized that BTBR mice would exhibit increased anxiety-like behavior compared to B6 mice, previous research demonstrated inconsistent results for the elevated plus maze, light dark box exploration and open field. Consequently, further research on anxiety-like behavior in a mouse model of autism, especially in accordance with a probable cause of ASDs like maternal obesity, was conducted. Overall, prenatal exposure to the high fat diet did not affect anxiety-like behavior, regardless of strain or treatment, in the elevated plus maze, light dark box exploration and open field. Although previous research demonstrated that a prenatal high fat diet has potential negative effects on the developing offspring, the data from the current experiment does not support this claim, as the BTBR mice prenatally exposed to the high fat diet demonstrated less anxiety-like behavior than B6 and/or BTBR mice prenatally exposed to the control diet. Therefore, changes in anxiety-like behavior were strain dependent.

POSTER #151

Divalent Cation Toxicity in Saccharomyces Cerevisiae

Carlos Merino

Faculty Mentor: Professor R.E. Corin
Department of Biology

Copper is an essential transition metal that plays many physiological roles within eukaryotic cells. At high concentrations of copper, an oxidative stress is induced that leads to the formation of reactive oxygen species e.g. hydroxyl radicals. Many organisms have measures setup (induced phenotypes) to prevent the accumulation of intracellular copper [within their cells]. Metallothionein (MT) is a cytoplasmic metal binding protein coded for by the CUP1 gene of Saccharomyces cerevisiae. Although a micronutrient, copper becomes lethal at high concentrations. MT can bind copper and thus reduce toxicity. Copper toxicity, like oxidative stressors, induces cellular responses to alleviate toxicity. S.cerevisiae is able to amplify the gene CUP1 to deal with the abnormal Cu concentrations. Resistance to copper toxicity is copper concentration-dependent. At higher concentrations of copper, we believe other mechanisms may awaken to survive metal toxicity. We have generated and cloned several variants of Saccharomyces cerevisiae that grow in concentrations of copper that give 100% killing of the Wild Type. We are testing our variants for cross resistance to other toxic divalent cations and oxidative stressors. We are hoping to elucidate possible shared components to resistance to multiple toxic agents.

POSTER #126

Developmental Reprograming in Sea Urchin

Victor Ramirez (The Verrazano School)

Faculty Mentor: Professor Cesar Arenas-Mena
Department of Biology

The goal of this experiment is to observe developmental reprogramming in sea urchin embryos using the Tet-On 3G Inducible Gene Expression System. The expression systems transactivator will bind to the PTRE3G promoter in the presence of doxycycline (Dox). This is due to a conformational change in the transactivator and results in enhanced transcription. This can simultaneously activate a fluorescent reporter protein (FRP) like mCherry as well as transcription factor Pmar1, which induces skeletogenic mesenchyme specification during embryogenesis. When using a mCherry FRP, if the embryo expresses a red fluorescence after adding Dox, then our gene of interest is turned on and we have a high performing inducible clone. In order to optimize the system, we will express the transcription factor TET3G by using the hatching enzyme transcriptional driver, which is expressed throughout the early sea urchin embryo. In previous trials, we found that when there were more

copies of our construct there was more expression. However, embryos that had more copies were more deformed than those with less copies.

We theorize that the TET3G transcription factor was being expressed too much. Recently, Ilija Melentije et al. found that mCherry is prone to precipitate and cannot be processed by the embryo. The embryo will respond by eliminating the mCherry in a large cytoplasmic extrusion called an exopher.

POSTER #42

To Determine the Effect of TGFb Signaling Inhibition in Glioblastoma Multiforme (GBM)

Arouje Shaikh (The Verrazano School), Briana Soto (The Verrazano School), Fatima Rizwan (The Verrazano School), Jay Xiangliu Yang, Monnique Johnson (Macaulay Honors College), Norhan Sobhi, Brianna Sampson

Faculty Mentor: Professor Nancy Liu-Sullivan
Department of Biology

Glioblastoma Multiform (GBM) are commonly found within the cerebral hemispheres of the brain. However, it can be found anywhere in the brain or 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 a two-year survival of 30%. GBM consists of a mixture of cell types and many cytokines that promote its growth and metastasis. A cytokine called Transforming Growth Factor Beta (TGFb) contributes to GBM cell growth. LY2157299 is a small molecule inhibitor developed by Eli Lily. The LY compound blocks TGFb signaling by inhibiting a TGFb receptor that I expressed on the cell surface. Identifying synergistic compounds, will enable us to modulate cytokine signaling and examine the reduction rate of tumor growth. Our primary focus in the lab is create a passage of healthy cells to preform experiments such as dose response assays and treatment of the cells using FDA approved drugs in combination with LY. I am currently preparing to photograph GBM cells treated with LY along with negative controls followed by data analysis.

At this moment of time, I have not obtained any substantial results due to the unfortunate circumstance of a five-week period where there was continuous contamination to the cells. It was decided that antibacterial anti-fungal should be used instead of puromycin/streptomycin in the media. We have also successfully cultured GBM cells (by using anti-anti and increasing initial cell seeding density). We have had a successful experiment of GBM treated with LY compound at 10 uM. The cells were stained for nuclei followed by fluorescent imaging. Striving towards a definite conclusion, my lab mates and I are imaging our results and continue to wait for a plethora of healthy cells.

POSTER #50

Effects of maternal high fat diet on learning and memory in the offspring of a Mouse Model of Autism Spectrum Disorder

Ellie Theodorakis (Macaulay Honors College)

Faculty Mentor: Professor Kathryn Chadman
Department of Biology

Autism spectrum disorders (ASD) are neurodevelopmental disorders characterized by impairments in social communication, repetitive behaviors, and/or restricted interests. Individuals with ASD oftentimes display intellectual disability and motor deficiencies, which lead to impairment in everyday functioning. Prenatal risk factors, coupled with genetic abnormalities, can affect the prevalence of ASD. Obese women are 47% more likely to have a child with ASD, indicating that examining prenatal risk factors is important to assessing potential causes of autism (Li et al., 2016). To understand the effects of maternal diet affect the developing fetus in a mouse model of ASD, the dams were placed on a high fat diet (60 kcal% fat D12492, Research Diets Inc., NJ) or a control diet (45 kcal% fat D12451, Research Diets Inc., NJ). The subsequent offspring were tested on learning and memory and motor tasks, cued and contextual fear conditioning and accelerating rotarod. Mouse strains used in this study include C57BL/6J (B6) mice and BTBR T+Itp3 tf/J (BTBR), the latter serving as the mouse model for autism.

All of the BTBR mice performed more poorly on the rotarod than the B6 mice, regardless of treatment. Perinatal HFD did not affect motor ability on the accelerating rotarod. The BTBR mice also performed more poorly in both contextual and cued fear conditioning. However, the HFD exposure had opposite effects in the two strains where the HFD B6 pups demonstrated less freezing than the controls but the HFD BTBR pups froze more than the control BTBR pups. The HFD had no effects on motor learning and improved contextual and cued fear conditioning in the mouse model of ASD. This suggests that a diet high in fat during pregnancy will not adversely affect learning and memory.

CHEMISTRY

CONFERENCE LOCATION:
EAST LOUNGE

POSTER #109

Aggregation of Tau Hexapeptide into Fibers with Molecular Dynamics Simulations

Mohamed Al Sharif (The Verrazano School)

Faculty Mentor: Professor Sharon Loverde
Department of Chemistry

All-atomistic and coarse-grained molecular dynamics simulations are used to probe the self-assembly process of drug delivery vehicles that contain the cancer drug camptothecin (CPT). These drug delivery vehicles are composed of a drug amphiphile, a hydrophobic drug that is conjugated to a short peptide sequence. One of the types of drug amphiphiles is conjugated to a short hexapeptide sequence from the Tau peptide, a protein that is involved in Alzheimer's disease. All-atomistic and CG molecular dynamics simulations of the isolated hexapeptide have been performed and the degree of hydrogen bond formation has been characterized. Specifically, the characterization of the degree of hydrogen bond formation over time allows to study the conformation of the peptide as it aggregates into fibers. These results help the design accurate coarse grained molecular dynamics models to describe the aggregation of this hexapeptide from the Tau sequence at even longer times and characterization the self-assembly process of the fiber shape.

POSTER #71

Attempt to Synthesize Short Organosilica Nanotubes

Ammara Azam (The Verrazano School)

Faculty Mentor: Professor Michael Kruk
Department of Chemistry

Micelles are emerging as versatile carriers of medicine/drugs that are sure to transform the way we transport substances in the body. Micelles are aggregates composed of amphiphilic molecules called surfactants that point their hydrophilic heads towards an aqueous solution and keep their hydrophobic tails in the middle of the micelle. In the nanoparticle field, micelles are revolutionary because they can template porous nanoparticles, such as nanotubes. In this project, the goal is to create micelle-templated nanotubes as a potential drug delivery system, which requires that the tubes be short in length. In an attempt to obtain short micelle-templated nanotubes, the synthesis of ethylene-bridge nanotubes using methodology developed earlier in Dr. Kruk's lab was implemented, resulting in relatively long nanotubes. This method involved combining acidic aqueous solution, the surfactant, the micelle swelling agent with the appropriate framework precursor. The length control is our target. The sonication to break the micelles or nanotubes into shorter fragments is one option. Other possible ways include adjusting the quantity of the framework precursor, the stirring rate and the temperature of the water bath in the synthesis. In the process of decreasing the amount of the framework precursor for obtaining shorter tubes, asymmetrical short tubes were observed.

Asymmetrical tubes are very unique and rare. Therefore, our interest has shifted toward identifying conditions favorable for their formation, for instance, the increase in the amount of the swelling agent. By examining the results using transmission electron microscopy, nitrogen adsorption and perhaps other analysis methods, the changes and hopefully improvements in the structure (that is, the asymmetrical tube formation in appreciable content or the nanotube shortening without deterioration of the tube morphology) will be inferred. From here, steps can be speculated in selecting better reaction conditions. Thus, the task is to create short micelle-templated nanotubes with a potential of drug delivery as a motivational factor.

POSTER #34

Singlet Oxygen Generation with Various Sensitizer Presentations

Gil Barahman

Faculty Mentor: Professor Alan Lyons
Department of Chemistry

Singlet oxygen is an excited state of oxygen that has many real world applications, such as killing bacteria. It is currently being considered by dental professionals in an effort to kill periodontal bacteria. The current method utilizes a device that limits the delivery range to about 3-5 mm deep pockets. This is an issue, as some bacterial 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 the sensitizer (silicon-phthalocyanine sol-gel particles) is illuminated with light of the appropriate wavelength (669 nm from a laser diode) in the presence of oxygen gas. This reaction was carried out in a cuvette with a magnetic stir bar, and the singlet oxygen was detected by trapping with dilute 9,10-anthracene dipropionate dianion and measured using UV-Vis spectroscopy. In this project, singlet oxygen was generated by several different methods: sensitizer particles dispersed directly in a D2O solution of the trapping agent; sensitizer particles embedded on PDMS posts dispersed in solution; and sensitizer particles embedded on PDMS posts taped to the side of the cuvette. These tests were conducted as part of an ongoing project to serve as controls. The results indicate that the presentation of the particles in solution affects both the rate of reaction as well as the ease of analysis. While having sensitizer particles dispersed directly into solution results in the highest reaction rates, this method cannot be reliably used as a control due to scattering caused by the particles.

POSTER #117

Developing New Technology for Making Hybrid Tech to make Tubule with Anti-Bacterial Properties for 3D Cell Culture

Malak Daou, Yan Pevtsov

Faculty Mentor: Professor Krishnaswami Raja
Department of Chemistry

The scaffold of tubular sponges is analogous in construction to hydrothermal vent fields and chemical gardens with a marked difference: the protein component is missing in the latter constructs, which are purely mineral structures. We have recently achieved sponge biomimicry and redefined the chemical garden experiment by seeding a concentrated sodium silicate-potassium phosphate solution containing solubilized gelatin with calcium chloride to produce protein intercalated silicate-phosphate tubules-Sponge mimetic Tubules (SMTS) which are essentially bio-hybrid chemical gardens. The final constructs bear a remarkable morphological resemblance to the scaffolds of tubular sponges. This discovery transforms the classic chemical garden experiment into a highly innovative technology to create advanced bio inspired materials for a range of potential applications including 3D cell culture (bioengineering, origin of life research) and battery material development.

In this project, we focus on producing zinc powder incorporated sponge mimetic tubules. The zinc component confers potential antibacterial properties to the material allowing for 3D cell culture without bacterial contamination. Zinc is a well-known material used in battery development, but has the disadvantage of forming undesirable dendrites. The zinc incorporated sponge mimetic materials we prepare would serve as a new generation of battery material that resists dendrite formation by virtue of its sponge architecture. Zinc sponge mimetic material were created using sodium silicate (3M), gelatin 15%, and zinc powder (15%) seeded with calcium chloride powder. SEM image of the material clearly shows the porous nature of the sponge. The incorporation of Zinc was confirmed via EDS elemental analysis.

POSTER #113

Synthesis and Structural Analysis of the Library of Tyrosine Sulfate Peptides Mimicking the Nt-CCR5

Brandon Fridman (The Verrazano School)

Faculty Mentor: Professor Fred Naider
Department of Chemistry

AIDS, caused by the HIV-1 virus, remains an epidemic in certain regions of the world. For HIV-1 to infect white blood cells, it must bind to transmembrane proteins on their surface. The envelope glycoprotein of HIV-1, gp120 initiates membrane fusion and the entry of viral RNA by binding to protein receptors on white blood cells, CD4 and its co-receptor, CCR5 respectively. CCR5 normally binds to chemokines such as RANTES, which is responsible for recruiting immune cells to sites of infection and inflammation. The initial interactions of both gp120 and RANTES with CCR5 involves its extracellular N-terminal region (Nt-CCR5) The hypothesis of this research is that understanding the interactions between Nt-CCR5 and RANTES at an atomic-level will help others to develop strategies to prevent HIV-1 binding. To achieve this goal, we synthesized Nt-CCR5(8-20) peptides with different sulfation patterns on its Tyr residues.

Nt-CCR5(8-20) was assembled using solid phase peptide synthesis with Fmoc protected amino acids. Seven variants of Nt-CCR5(8-20) were synthesized, three were monosulfated on either Tyr10, Tyr 14 or Tyr 15, three were doubly sulfated on Tyr10 and Tyr 14, Tyr 10 and Tyr 15 or Tyr14 and Tyr15, and one peptide was not sulfated. Previously sulfation of tyrosine had been determined to affect the binding affinity of CCR5 to RANTES and HIV-1. Purification of crude Nt-CCR5(8-20) was done using high performance liquid chromatography (HPLC). Analyses of pure samples of Nt-CCR5 used analytical HPLC, mass spectroscopy, ultraviolet spectroscopy, and circular dichroism. NMR chemical shift perturbations revealed the contribution of the sulfation of tyrosine to the binding of the peptides to RANTES. We found that the peptides were primarily disordered in aqueous buffer but became partially helical in trifluoroethanol. Peptides with two sulfated tyrosines bound approximately 10-fold more strongly than the monosulfated peptides. Our results should contribute to better understanding the properties of the CCR5 receptor and its interactions with RANTES and HIV-1 surface proteins.

POSTER #70

Imitation of Life: Sponge Mimetic Tubules. Growing Biomimetic Sponges in a Bottom to Top Approach

Cassidy Iannariello, Krishnaswami Raja, Michael Bucaro, Lorraine Chawki

Faculty Mentor: Professor Krishnaswami Raja
Department of Chemistry

Have you ever wondered how the life of organisms and animals evolved? The origin of multicellular life is a question being investigated. In my research, we hope to answer that question to the fullest. It has been believed that animal development has evolved from pre-existing mechanisms which regulates cell differentiation in the ancestors of animals as well as single celled organisms. The evolution of animals is not fully known yet, but it is known that the choanoflagellates are the closest living relatives to them. Choanoflagellates are single-celled, colony-forming microeukaryotes which are found in both marine and freshwater environments. We plan to use the Psuedaxinella lunaecharta, also known as the red or yellow ball sponge, and to promote the choanoflagellate strain to form linear aggregations. In the end, we plan to show how multicellular life has begun. The proposed experiment will simulate the organization of cells in natural sponges as well as using the psuedaxinella lunaecharta to help us study the actual anatomy of the sponge cell. This study will explain the events that had led up to the evolution of animal life.

We decided to use a sponge as our concentration of study because sponges are considered the earliest form of multicellular animal life. Their structure is composed of an intercalating network of protein with calcium silicate and carbonate embedded within chaonocytes organized to form the multicellular organism. The choanocytes of the sponge closely resemble choanoflagellates. These organisms live in hydrothermal vent systems, which produce the building blocks of DNA and proteins. It has been observed that bacteria colonizes these structures. Our plan is to obtain a yellow ball sponge and place it in a marine environment tank. We will allow the sponge to grow to an ideal size with exceptional conditions; then begin a protocol of isolating the sponge cells. After the sponge cell has been dissociated carefully, we will then grow a colony. We are hoping to prove that multicellular life has evolved from choanoflagellates.

POSTER #135

Eliminating Glioblastoma Cancer Cells and Glioblastoma Brain Tumor Using Tricurin Phytosome

Fatima Inusa

Faculty Mentor: Professor Probal Banerjee
Department of Chemistry

Curcumin, the principal curcuminoid of turmeric, has been shown to have anticancer and anti-inflammatory properties. Curcumin, however, has low solubility and bioavailability. For these reasons, multiple research teams have focused on finding ways of enhancing the efficacy of curcumin in treating various diseases such as cancer. In this regard, our lab formed a complex of curcumin, epicatechin gallate from green tea and resveratrol derived from grapes, collectively known as Tricurin, which provided a synergistic effect in treating various cancers. In addition, in a recently published data, our lab showed that a derivative of curcumin, curcumin phytosome, which is a lipid-linked form of curcumin, was able to rescue 60% of mice with well-established GL261-evoked brain tumor. In view of this, our current research will focus on formulating a lipid-linked form of tricurin, which we will refer to as Tricurin Phytosome, and test its effect on GL261 glioblastoma cells via WST-1 cell viability assay, immunocytochemistry and immunohistochemistry. We hope to provide a more potent derivative of curcumin for eliminating glioblastoma cancer cells and glioblastoma brain tumor in mice, as well as other forms of cancers.

POSTER #118

Chitosan Microgels for the Encapsulation of Biosensing Bacteria

Regina Klimchuk (The Verrazano School)

Faculty Mentor: Professor Krishnaswami Raja
Department of Chemistry

Genetically engineered bacteria have great potential as biosensors. Due to the difficulties in handling single bacterial cells, an encapsulation approach would make the handling of biosensing bacteria more practical. Microgels are microparticles of a gel forming material, which are usually prepared by cross-linking a dilute polymer solution. We have chosen the cationic polysaccharide chitosan to act as the matrix for encapsulating biosensing bacteria. Since most cells in general have a negative surface charge, this would cause the positive charges of the chitosan to coat the surface of the bacteria. Then the excess charges of the bound chitosan chains can be cross-linked by a small ionic cross-linker. By cross-linking the chitosan after it is coated the bacterial cells, we can force the encapsulation to a very high efficiency.

Using E. coli, which constitutively express green fluorescent protein (GFP), we can standardize and optimize the preparation of encapsulating bacteria in chitosan microgels. Morphology of blank and E.

coli loaded microgels will be assessed by scanning electron microscopy (SEM). Encapsulation efficiency will be determined by live cell imaging. Viability of loaded bacterial cells after microgel preparation and after freeze-drying will also be assessed by live cell imaging using GFP as a viability marker. Biosensing bacteria will eventually be loaded into chitosan microgels. At this point, live cell imaging will be used to detect the expression of GFP in response to chemical stimuli. The lag time of the response and duration of response as a function of chemical stimulus concentration will be evaluated using live cell imaging.

POSTER #77

The Synthesis and Characterization of a Novel Naphthalene Monoimide Monoanhydride

Aaron Malinoski

Faculty Mentor: Professor Shi Jin
Department of Chemistry

The synthesis of a novel naphthalene monoimide monoanhydride, designed as a highly processible and powerful organic electron acceptor, has the potential to self-assemble into a discotic columnar liquid crystalline phase, which was performed through several steps. The product of each reaction was purified by column chromatography. Reactions were monitored/analyzed using TLC (thin layer chromatography), IR spectroscopy, and 1H-NMR. TLC was used for monitoring reaction progress and an initial purity assessment of spectroscopic techniques provided more detailed information on the structure and purity of a compound.

POSTER #45

Expression and Purification of Novel Snake Venom Tx7335

Jamye Moya

Faculty Mentor: Professor Sebastien Poget
Department of Chemistry

The goal of this study is to produce a synthetic version of Tx7335 that is indistinguishable from its natural form. Tx7335 is a novel peptide toxin that was originally isolated from the Eastern green mamba venom. A unique characteristic of Tx7335 is the ability to promote potassium channels to open. The toxin must be synthesized because we cannot perform heteronuclear experiments on the natural source; therefore, we use bacteria that are modified by the introduction of a synthetic gene encoding for Tx7335. The E.coli bacterial cells will be grown in minimal media where the nutrients can be exactly defined to allow for labeling of the protein with specific atoms that will be required for the planned characterization techniques to work. The protein will be released from the bacterial cells by breaking up the cell with a sonicator. Once the protein is released, it will be purified and refolded into its correct three-dimensional shape by affinity chromatography. Tx7335 is produced with an accessory helper protein (Thioredoxin) attached to help in the expression and purification, and will be released from Thioredoxin through cleavage with an enzyme that recognizes the amino acid sequence between Thioredoxin and Tx7335. We will then separate the free Tx7335 from Thioredoxin by HPLC. We have successfully synthesized Tx7335 and cleaved it from Thioredoxin. The outcome of this research is to obtain sufficient amounts of pure peptide toxin in order to study its structure and mechanism of function.

POSTER #10

pH Dependence of Metal Binding Properties of Calgranulin C

Aneesha Nadukudiyil Jose (The Verrazano School)

Faculty Mentor: Professor Rupal Gupta
Department of Chemistry

In this project, I am going to study the pH dependence of metal binding properties of the protein CalgranulinC. CalgranulinC, commonly known as S100A12, is a member of the S100 protein family. This protein has an EF-hand calcium-binding site. S100A12 also binds to transition metals like zinc and copper. It accumulates at the site of inflammation. Because it is released during the inflammatory responses, it is well known for proinflammatory responses. A membrane receptor called RAGE is the main signal transduction receptor for S100A12. Binding of S100A12 with RAGE activates cells like macrophages and lymphocytes for the inflammatory reactions.

S100A12 has specific binding affinity for calcium and zinc, which play an important role in its functions. Presence of the zinc increases the affinity of protein to the calcium, which may increase the protein's affinity to their receptors. Metal binding to S100A12 also facilitates the oligomerization of this protein. In the absence of ion, S100A12 is a dimer. Depending on the concentration of calcium and zinc, it can form tetramer to hexamer oligomers. Therefore, depending on which metals it binds to, the proteins have different structures and different functions. Thus the cellular binding activity could be a property related with protein structural changes mediated by the action of calcium and zinc. Calcium binding also affects the zinc binding properties of S100A12. In the presence of high concentration of calcium, S100A12 sequesters zinc from the microbial growth medium more efficiently.

S100A12 can also bind to copper ions. Binding of copper facilitates S100A12 for the formation of reactive oxygen species and hydroxyl radicals, which can kill the bacteria and attract more neutrophils and macrophages into the inflammatory site. It also enhances the binding of S100A12 to the target by either change in the target binding site or formation of oligomers. This all proves that S100A12 proteins require metals like calcium, zinc, and copper in order to work efficiently and properly. The appropriate levels of binding occur only in optimum environments. One factor that affects metal binding to proteins is pH. By the end of this project, it will be more clear how pH effects the metal binding activities of the protein CalgranulinC.

POSTER #78

Synthesis of Ethylene-Bridged Organosilica Nanotubes Templated by Block Copolymer Surfactant

Oluwatomisin Oredipe

Faculty Mentor: Professor Michal Kruk
Department of Chemistry

Recently, there emerged an opportunity for the synthesis of organosilica nanotubes templated by single micelles of surfactants, including commercially available Pluronic poly(ethylene oxide)-poly(propylene oxide)-poly(ethylene oxide) block copolymers. In our work, organosilica nanotubes with ethylene (-CH2-CH2-) bridging groups in the framework were obtained using bis(triethoxysilyl)ethane (BTEE) framework precursor and judiciously selected Pluronic surfactant combined with an appropriate swelling agent. The synthesis was carried out in acidic aqueous solutions.

The products were characterized using transmission electron microscopy to establish their

morphology and gas adsorption to determine the inner tube diameter and the surface area. The nanotubes had high surface areas and inner diameters of 10 nm or more. We observed that the inner tube diameter can be controlled by adjusting the temperature at which the nanotubes form. We explored the range of temperatures at which good quality nanotube product forms and tried to establish the range of inner nanotube diameters that can be generated using our method.

POSTER #20

Incorporation of Therapeutic Proteins into Polyester Nanofibers via Protein-Polyelectrolyte Complexes

Nicole Pillarella (Macaulay Honors College), Nicole Zubrich (The Verrazano School)

Faculty Mentor: Professor Krishnaswami Raja
Department of Chemistry

Proteins are biological macromolecules which are composed of amino acids and occasionally lipids, carbohydrates, and other organic moieties. Given their wide range of biological activities, proteins have great potential as therapeutic agents. However, due to their poor pharmacokinetic profiles, the use of proteins for therapeutic applications is challenging, requiring specialized drug delivery systems. Poly(lactide-co-glycolide) (PLGA) (and other polyester) based systems are among the most commonly used, and researched drug delivery systems, but are incompatible with protein therapeutics because they are fabricated with organic solvents that would compromise the protein's tertiary structure and hence, biological activity. In our attempts to circumvent this problem, we have employed protein-polyelectrolyte complexes to suspend proteins in organic solvents without compromising their structure and activities. Hemoglobin was initially used as a model protein due to its tendency to irreversibly aggregate, which is a characteristic shared by many proteins, including various growth factors. The enzyme lysozyme, which possesses antibacterial and antifungal activities, and the blood clotting protein fibrinogen, were both used due to their therapeutic potential when delivered via polymer nanofibers. Protein integrity after exposure to the organic solvent was monitored via fluorescence spectroscopy. Hemoglobin's quaternary structure was evaluated through size exclusion chromatography. The activity of lysozyme released from the PLGA nanofibers was analyzed using a broth microdilution assay, while the clotting activity of fibrinogen released from the PLGA nanofibers was evaluated by an enzyme assay with fibrinogen. Our findings reported here indicate that our methodology of forming protein-polyelectrolyte complexes is capable of shielding these proteins from organic solvents, thereby enabling the delivery of these proteins, and potentially others, via PLGA-delivery systems.

POSTER #116

PLGA Implants Loaded with Insulin-Polyelectrolyte Particles for the Treatment of Diabetes

Nicole Pillarella (Macaulay Honors College)

Faculty Mentor: Professor Krishnaswami Raja
Department of Chemistry

We have previously prepared protein-polyelectrolyte complexes, which were used to suspend therapeutic proteins in acetone for their subsequent loading into poly(lactic-co-glycolic acid) (PLGA) nanofiber meshes. Biodegradable polymer nanofibers are useful for the direct delivery of therapeutic agents to a specific site under certain conditions. On the other hand, biodegradable polymer nanofibers are not practical for the systematic delivery of therapeutic agents. A more practical approach to this could be subcutaneous implants. The peptide hormone insulin will be used to model the delivery of therapeutic peptides/proteins by biodegradable polymer implants. Insulin will be

loaded into polymer implants as an insulin-polyelectrolyte complex, since the fabrication of polyester implants would require using bulk organic solvent. Bulk organic solvents are very potent protein denaturants and would most likely abolish the therapeutic activity of a therapeutic protein on contact.

Insoluble insulin-polyelectrolyte complexes will be characterized for size and morphology by using scanning electron microscopy, and composition by using infrared spectroscopy and colorimetric reactions. The insulin released from the polyelectrolyte complexes will be characterized by fluorescence spectroscopy for tertiary structure and glucose uptake assays for biological activity. Insulin loaded PLGA implants will be prepared as thin films using solvent casting. The loading of insulin into PLGA implants will be characterized by scanning electron microscopy. Integrity and activity of the released insulin will be assessed by fluorescence spectroscopy and in vitro assays.

POSTER #114

Synthesis, Purification, and Structural Characterization of P38 Kinase Interaction Motif (KIM) Peptides

Jacob Solanki

Faculty Mentor: Professor Fred Naider
Department of Chemistry

P38 is a Mitogen Activated Protein Kinase (MAP Kinase) involved in signaling cascades. Hematopoietic Protein Tyrosine Phosphatase (HePTP) is a protein phosphatase known to deactivate p38 by dephosphrylation. Previous studies show that the mechanism by which this dephosphorylation event occurs involves protein-protein interactions mediated by a motif on HePTP known as the Kinase Interaction Motif (KIM). Six synthetic peptide KIM analogs were assembled via Solid Phase Peptide Synthesis and purified by reversed-phase high performance liquid chromatography (HPLC) to ~95% homogeneity. The migration patterns of four different KIM motif peptides on HPLC columns correlated with their hydrophobicities. The KIM peptide (HePTP) (see figure 2 for sequences) was studied via Circular Dichroism (CD). The CD spectra shows that the HePTP KIM analog showed random coil propensities in phosphate buffer solutions of pH 6, 7, and 8 and has an alpha helical propensity in 75% TFE (See Figure 7). Isotope-edited/isotope-filtered NOESY NMR spectra revealed an interaction between methyl groups of the Ile residue of P38 and methyl groups of Leu15 and Met17 of the MetP38 KIM peptide.

POSTER #155

Recombinant Production of a Sodium Channel Voltage Sensing Domain Involved in Pain Response

Ping Wang

Faculty Mentor: Professor Sebastien Poget
Department of Chemistry

Nav1.7 is important in the pain response in the human body. Nav1.7 is a promising target for new pain relief drugs. Knowing the structure of Nav1.7 and the location where natural toxins against this channel bind can help scientist design drugs to mimic the toxins and create new non-addictive pain killing medication. Currently working towards gaining structural information about Nav1.7 via NMR spectroscopy. As an important step, we need to develop a system for producing recombinant Nav1.7 voltage-sensing domain through expression in bacteria and subsequent reconstitution into a membrane mimic.

An inclusion body expression system was designed to produce the voltage sensing domain of human Nav 1.7, and I have been able to obtain significant amounts of pure protein. Currently we are

determining conditions for obtaining the protein in a folded state after purification before studying its three-dimensional structure by nuclear magnetic resonance spectroscopy. This study could mean opening a whole new market for drugs design that can target and inhibit this channel without the risk of addiction to opiate-based medications.

POSTER #43

Cytocompatible Polysaccharide Incorporated Biomimetic Tubules

Nicole Zubrich (The Verrazano School)

Faculty Mentor: Professor Krishnaswami Raja
Department of Chemistry

Chemical gardens are created by seeding water-soluble salts of multivalent cations of many of the elements in the periodic table into a highly concentrated solution of sodium silicate. They can also be produced by injecting concentrated salt solutions into sodium silicate. The mechanism of formation of these constructs is driven by osmotic pressure and buoyancy. Structures that resemble chemical gardens exist in nature as seen in hydrothermal vent systems at the ocean floor in the form of mineral assemblies. These assemblies closely resemble the scaffolds of natural sponges, which are considered as the first animal life form.

In this proposal, we redefine the Chemical garden experimentation to reconstruct tubular sponges through a nonequilibrium process of combining various ratios of sodium alginate into solutions capable of proceeding in construct formation. Sodium alginate is a good candidate for this specific research due to its polysaccharide configuration extracted from brown seaweed providing a strong rigid formation of construct.

The chemical garden chemistry is used to generate sodium alginate incorporated tubules. These biomimetic tubules are prepared by the dissolution of various percentages of sodium alginate into saturated hot water, and then seeding with calcium chloride. The surface chemistry of the scaffolds will be programmed to introduce cue molecules, which promote the adhesion of test mammalian cell lines. The mammalian cell lines explored in the experimentation were cervical cancer cells known as Hela, and fibroblasts. The attachment and long-term viability of cells on the final supracellular assemblies will be characterized via advanced microscopy.

The aim of this experimentation is to create surface chemistry of sponge-mimetic tubules (SMTs) for the adhesion of mammalian cells optimizing the environment for 3D cell culture. The enhancement of cell adhesion comes from cue molecules that allow pluripotent stem cell differentiation. This programing allows the optimization of the surface of the SMTs for the culture of mammalian cells to create 3D supracellular assemblies for future tissue engineering applications.

COMPUTER SCIENCE

CONFERENCE LOCATION:
WEST LOUNGE

POSTER #125

Drone-Cloud & AI Based Video Analytics for SI-Deer Population Monitoring & Control

Matthew Bessler (The Verrazano School)

Faculty Mentor: Professor Sos Agaian
Department of Computer Science

With a sharp increase in deer population on Staten Island, we are seeing many more problems because of it (vehicular-collisions and Lyme's disease to name a couple). This system looks to develop a solution for it. The purpose of this research is to use artificial intelligence and machine learning to develop an application completely in the cloud to assist in detecting, monitoring and controlling deer population that is unique for Staten Island. Artificial intelligence will allow for the system to perform a task based on the output of processed data from machine learning. It will involve analyzing real-time video feed from a drone in the cloud and relaying that information back to the user and/or acting on it.

The cloud is composed of numerous global services that can seamlessly be incorporated in applications. Through using cloud services in applications, you can significantly lessen the constraints of processes when it comes to space and time along with improved efficiency, storage, scalability and content delivery for the system. Through using a combination of artificial intelligence, machine learning, and cloud computing, this research looks to develop an AI system that can identify deer in a video stream from a drone and perform real time actions and analytics.

POSTER #149

emot-iCan: A Serious Game to Assess Emotion Recognition

Ethan Binyaminov (The Verrazano School)

Faculty Mentor: Professor Deborah Sturm, Bertram Ploog
Department of Computer Science, Department of Psychology

This research project is part of a larger effort is 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). In the iPad game, emot-iCan, developed by Dr. Sturm (Computer Science) and Dr. Ploog (Psychology) (Sturm, Peppe & Ploog, 2016), the player matches a visual or auditory stimulus with comparison images, each with a differently expressed mouth, eyes, or both. The application collects (and stores to the cloud) data based on the player's choices, which should produce a better understanding as to whether the player has a holistic view of emotions. The study and development of emot-iCan is on-going and preliminary results will be presented.

References

Sturm, D., Peppe, E., & Ploog, B. (2016, May). eMot-iCan: Design of an assessment game for emotion recognition in players with Autism. In Serious Games and Applications for Health (SeGAH), 2016 IEEE International Conference on (pp. 1-7). IEEE.

Ploog, B. O. (2010). Stimulus overselectivity four decades later: A review of the literature and its implications for current research in autism spectrum disorder. Journal of autism and developmental disorders, 40(11), 1332-1349.

POSTER #119

High Performance Computing Solutions for Flow Shop Scheduling Subject to Machine Availability Based on Ant Colony Optimization

Andrew Cardozo

Faculty Mentor: Professor Yumei Huo
Department of Computer Science

The ant colony optimization algorithm is a metaheuristic solution for optimization inspired by the foraging behavior of ants in nature. A subset of "swarm intelligence" algorithms, it finds an optimal path or order using simulated "ants" that leave pheromone trails behind in reaching an endpoint, so that all ants eventually converge on the most efficient path. A two-machine flow shop is described as follows: There are two machines, each of which can handle at most one job at a time. There are jobs that need to be scheduled. Each job has two operations, which will be scheduled on two machines respectively. For each job, the second operation cannot begin before the first operation completes. The bulk of flow shop research in the last decades has been focused on the minimization of the maximum of the job completion time, i.e. the length or makespan of a schedule. Gupta and Dudek pleaded that criteria in which the costs of each job are reflected have a better economic interpretation than the makespan objective has. On the other side, machines may not always be available due to breakdown, preventative maintenance, or processing unfinished jobs. The production manager has to decide: in a flow shop environment, with limited machine availability due to preventative maintenance or periodical repair.

How should jobs be scheduled in order to optimize the total completion time? In this project, we design and implement High Performance Computing (HPC) solutions for two-machine flow shop problem subject to limited machine availability, optimizing the total completion time. We develop our parallel algorithms based on ant colony optimization, which will be applied to shared memory and distributed memory platforms. We also study a hybridized solution incorporating both. We perform experiments testing the algorithms and analyze their performance in terms of error ratio, running time and speedup.

POSTER #111

Front-End Design That Induces an Emotional Response

Vincent Crescente (The Verrazano School)

Faculty Mentor: Professor Sarah Zelikovitz
Department of Computer Science

This project focuses on studies that lead to insight about which web designs induce an emotional response in a user. Many attributes about a website create an impression. Some of these attributes are color, text, positioning of content and negative space. These are a few examples, but are critical elements of a website that can have significant impressions on a user. There are designs that invoke emotions in certain people, but not in others. Some researchers say that it is difficult to make two people feel the same way.

If a designer is creating a website, he/she must understand the culture and what aesthetics an employer feels is important, such as wanting a website to feel trustworthy and secure. Most research studies agree that there is a lot of room for further study on specific attributes that make people feel certain emotions. The goal of this project is to cross-reference these studies and learn about web design decisions that induce an emotional response. I find this topic interesting because the relationship between a user and the user interface is a place for further research. Overall, using information from these research studies, I can attempt to create home web pages with a movie theater theme, reproducing an aesthetic for certain emotions.

POSTER #56

Title Deep Learning Neural Networks: Exploring Strategies for Regression Models

Brian Keegan (The Verrazano School)

Faculty Mentor: Professor Natacha Gueorguieva
Department of Computer Science

Artificial Neural Networks (ANNs) are a collection of artificial neurons modeled from real neurons similar to those in the human brain. When used as part of the network layers, they can be trained to complete various classification and regression tasks. In an ANN, artificial neurons link together and subcategorized between an input layer, hidden layers for actual processing, and an output layer for decision or prediction. ANNs have been further developed, and today Deep Learning Neural Networks (DLNNs) and Deep Learning (DL) achieve outstanding performance on many important problems in computer vision, speech recognition, and natural language processing. They are being deployed on a large scale by companies such as Google, Microsoft, and Facebook. DLNN architecture includes multiple layers of abstraction, which gives them a fascinating potential in learning to solve complex pattern recognition, regression, or time series problems that contain a huge amount of data.

In this research, we focus on solving real regression problems and propose DL topologies based on feedforward DLNNs as well as on Multilayer Perceptron (MLP) with DL. Our training is based on gradient descent method as well as on stochastic gradient descent by backpropagation. We use the following activation functions specifically designed for DL: Rectified Linear Unit (ReLU), Leaky ReLU (PReLU), and Swish. We also use Sigmoid and Tanh functions developed for regular NNs. The activation function is the NN's mode of interpreting data. In attempting to minimize the loss of the predicted versus actual values of real datasets for regression we implemented different activation functions to the hidden layers and made a thorough analysis of the results. Each experiment was based on cross validation scores for each activation function. For the purposes of analysis, the results are presented in tables and graphics. In order to conduct this research, we utilize the following hardware and software across all tests: GeForce GTX 970 with CUDA Toolkit; Intel i5 4690k @ 4.2GHz; 16GB RAM; Ubuntu 16.04 LTS 64-bit; Anaconda for Python 3.5; Tensorflow and Keras.

POSTER #68

Gradient Based Learning of Deep Multilayered Perceptron

Dominic Klusek

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 neural networks usually have a single hidden layer between the input and output layer of the network, DLNNs have multiple neuron layers between the input and output layers of the network and different approaches to training. Hidden layers of DLNNs create abstractions with different depth 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 and their capabilities to solve classification and regression problems when dealing with huge datasets.

A significant amount of research in the last 10 years has been focused on improving the theoretical understanding of NNs with Deep Learning (DL); the benefits of unsupervised training of raw data as well as on the combination of supervised and unsupervised training; varying the number of hidden layers and the number of their neurons; the development of specific activation and loss functions,

batch processing and normalization; different learning strategies based on gradient descent; and stochastic gradient descent methods by backpropagation. Software packages as Matlab, and Python libraries (Keras, Theano, TensorFlow, Cognitive Toolkit (CNTK)) were developed to allow researchers to focus their efforts on main issues of building DLNNs topology, proposing approaches to solution and choice of parameters. Listed packages expedite the experiments by providing the code of different activation and loss functions etc. The goal of this research is to propose DL topologies based on multilayered perceptron (MLP) for classification of multiclass real datasets with big dimensions. K-fold cross validation is used to split training and testing data to compare an average performance of each model and not just a single test. Topologies are modifications of a base MLP; are tested using MNIST and Shuttle datasets, and loss and accuracy metrics were compiled in a table for comparison.

POSTER #112

Convolutional Neural Networks for Automatic Cell Counting in Microscopy Images

Shannon Milone (The Verrazano School)

Faculty Mentor: Professor Shuqun Zhang
Department of Computer Science

My capstone project involves researching the use of deep learning methods for accurately counting the number of cells in microscopy images. Cell counting is an important process in the field of biological and pathological research. It is usually performed either manually or by image processing software, which is inaccurate due to the low quality of microscopy images, cell overlapping and complex backgrounds. Deep learning, especially with Convolutional Neural Networks (CNNs), improves the performance of many image-processing tasks. This project applies CNNs in cell counting to obtain accurate and robust results. My contributions for this project included: creating a large image dataset for network training and testing, implementing CNNs in the Caffe framework, comparing the performance of different CNNs in cell counting and optimizing CNN models for automatic cell counting.

POSTER #49

Kernel Based Approaches to Multiclass and Regression Models

Christopher Paradiso (The Verrazano School)

Faculty Mentor: Professor Natacha Gueorguieva
Department of Computer Science

Kernel methods give a systematic and principled approach to training learning machines. Due to their good generalization performance, they are successfully used in solving classification and regression problems. Support Vector Machines (SVMs) are the most well-known learning systems based on kernel methods. The SVMs proposed by Vapnik V. are classification and regression sets. These sets contain supervised methods initially formulated for two classes. When the training patterns are not linearly separable, a non-linear mapping is used to map the training data to some higher dimensional feature space. Therefore, the input data is often transformed into a high dimensional space when using some SVM kernel functions. A “linear separated” hyper plane optimally divides positive and negative samples in a mapped space. It is a very active topic of research and successfully applied to many areas including handwritten digit recognition, object recognition and texture classification, etc. Each kernel defines a different type of feature space. The resulting classifiers perform differently on training data than it does on test data. For example, SVM with Radial Basis Function (RBF) kernels, the resulting architecture will be an RBF Neural Network (NN). However, the method for determining the number of nodes and their centers is quite different from standard RBF networks. This is because two reasons: 1) the number of nodes is equal to the number of support

vectors and 2) the centers of RBF nodes are identifiable by the support vectors.

In this research, we extended the functionality of the software package libsvm with the following new components: a) significant modification of the proposed GUI; b) adding non-linear kernels (Multiquadric, Inverse Multiquadric, Thin Plate Splines, Symmetric Functions type 1 and 2 and RBF Gaussian) on top of the proposed package kernels Linear, Polynomial, RBF Exponential and Sigmoid (MLP); c) integrating an enhanced learning strategy in specifying the kernel parameters; d) reporting results in the form of an output text file; and e) developing an additional program for converting the database files from txt format to libsvm format and vice versa.

POSTER #115

Parallel Tabu Search Algorithms Design and Implementation for Two Machine Flow Shop with Limited Machine Availability

Soyean Park

Faculty Mentor: Professor Yumei Huo
Department of Computer Science

We work on the two-machine flow shop-scheduling problem with limited machine availability, an important problem faced by many manufacturers and service industries. The goal is to minimize the total completion time, which is the criterion, as Gupta and Dudek pleaded, reflecting a better economic interpretation. Various methods have been developed to solve the NP-hard problems like flow shop scheduling. To get near-optimal solutions for these hard problems, many metaheuristic techniques have been used, such as simulated annealing, Tabu search, genetic algorithm, and ant colony, etc. In this research, we focus on designing and implementing the Tabu search based High Performance Computing (HPC) solutions for our studied problem. We first extend three standard neighborhood search algorithms and obtain twelve variants of neighborhood search algorithms. Based on them, we design five different parallel Tabu search structures and implement them under Message Passing Interface (MPI) platform, i.e. each processor communicates with each other via MPI. We conduct various experiments to compare our five parallel algorithms. Our experimental results show a good performance of our designed algorithms in terms of error ratio, running time and speedup for the studied problem. A two-machine flow shop occurs when each job has two operations scheduled by two machines. Until the first operation of each job ends, its second operation cannot begin. In addition, two machines may not be available all the time because of breakdown, preventive maintenance, periodical repair or processing previous unfinished jobs.

POSTER #148

A Serious Game to Assess Collaboration in Autistic Individuals

Louis Pisicolo

Faculty Mentors: Professor Deborah Sturm, Professor Kristen Gillespie
Department of Computer Science, Department of Psychology

Autism Spectrum Disorder (ASD) encompasses a wide range of symptoms, skills, and levels of ability. Some characteristics of ASD include issues with communicating and collaborating with others. A team of students led by Dr. Deborah Sturm of Computer Science and Dr. Kristen Gillespie of Psychology are designing and developing a two-player serious game using the Microsoft Kinect interface. The goal of the game is to improve autistic individuals' collaboration skills, as well as improving the recognition of complex emotions. A key feature of our game is to automatically measure the level of player interaction using a face tracking algorithm.

POSTER #5

Predictive Policing

Syed Maaz (The Verrazano School), Tatiana Anderson

Faculty Mentor: Professor Feng Gu
Department of Computer Science

Crime forecasting can be used to identify and analyze crime patterns and trends so that police officers can prevent and stop crimes before their occurrences. But in many scenarios, it is hard to accurately predict real time crimes because of complexity of the system, interactions among different factors, and limited data availability. In this work, we plan to apply machine learning methods to forecast real time crimes. They will train the model by learning the existing data sets and predict the criminal activities by the trained model. Among them, the Random Forests algorithm is one of the best algorithms to classify large amounts of data with accuracy. It constructs a number of decision trees at training time and outputting the class that is the mode of the classes output by individual trees. The Random Forests algorithm will learn from the past data and predict if the crime will happen at a given location sometime and identify the key factors to affect the crime occurrences.

Online criminal data posted by police departments can be used to forecast the criminal activities. However, the limited information of the criminal activity is provided, such as date, GIS information, and criminal type. To accurately estimate the crime occurrence, more related information is needed. Through the GIS information, we can detect factors to affect crime occurrences, such as liquor stores nearby, the history of crimes, bus/subway stations, the safety index, and the weather, demographics, etc. In this project, we will develop algorithms to detect the above information according to a given GIS location. The detected information will be added to the data items of the crimes for the analysis and prediction. Moreover, we will use the high-level programming languages to call the GIS map and display the associated information of the crimes.

POSTER #147

Agent Based Model of Naked Mole Rat Nesting

Zeqja Vjosana

Faculty Mentor: Professor Michael Kress
Department of Computer Science

College of Staten Island is experimenting with African naked mole rats, NMRs. Researchers are trying to understand the behavior of the colony regarding the relationship between nesting and other environmental conditions. Naked mole rat colonies have a social structure where only two animals, a Queen and a Breeding Male, reproduce. The agent-based model, ABM, in development, will assist in tracking animal locations and proximity to the Queen and Breeding Male. The model will use data obtained from CSI's colonies using RFID, Radio Frequency Identification, to establish frequency distribution of NMR's feeding, nesting and exploring behavior.

POSTER #31

An Investigation on Bloom Filters and Their Applications in Cybersecurity

Kailie Yuan (The Verrazano School)

Faculty Mentor: Professor Zhang Xiaowen
Department of Computer Science

A bloom filter is a data structure designed to tell you, rapidly and memory-efficiently, whether an element is present in a set. It requires very little space relative to the size of the items you need to store and check. Essentially, it can very quickly answer variations on the Yes/No question, "Is this item in the set?" or "Have I seen this item before?" If the item is in the set, the bloom filter returns true otherwise, it will return false if it is definitely not the in the set. It is possible to come across false positive matches, but false negatives matches are not possible.

This paper explores several ways in which how a bloom filter is used. The three investigated in this paper are: flooding attacks, IP traceback and spam detection. A flooding attack is when an unauthorized user tries to consume a systems resources; a bloom filter can be used in detecting and preventing flooding attacks. Source path isolation engine (SPIE) was developed to enable an IP traceback. With a copy of a SPIE, the destination and time of receipt can be traced. Packet digests are recorded using a bloom filter. When detecting spam, an email goes through either a DCC system, which marks an email as spam if it has been seen many times before you or a razor system, which marks an email as spam if it is identified as spam in a database. A bloom filter is used in these two detection methods. An analysis of these applications will help me gain a deeper understanding in how useful a bloom filter is in cybersecurity.

CURRICULUM AND INSTRUCTION

CONFERENCE LOCATION:
WEST LOUNGE WALKWAY

POSTER #110

Measuring Quality of Differentiated Instruction

Samantha Bergen (Macaulay Honors College)

Faculty Mentor: Professor Irina Lyublinskaya
Department of Curriculum and Instruction

Advances in technology are being made every single day. As members of society, our lives are continually being improved by new devices that are created. People of all ages depend on technology in their daily lives and even very young children know how to work computers and smartphones (Wohlwend, 2011). As technology is such a large part of children's lives from an early age, it is only natural that it has been incorporated into their education. Many classrooms today are equipped with the usual computers, tablets, and projectors. However, virtual reality is a different technology increasingly being incorporated in some schools (Hansman, 2016).

Although not a new technology, its use in classrooms has taken off in recent years. Virtual reality headsets are being used to take students on fieldtrips around the world and to help students visualize mathematical and scientific models. There has also been some experimentation with completely virtual classrooms. Studies have shown that virtual reality can help students practice skills and difficult concepts learned in class, and it can provide multimodal ways for different types of learners to explore the content (Youngblut, 1998). Virtual reality has also been considered as a way to help students with different needs. It can be implemented with students with ADHD, students on the autism spectrum, and English Language Learners. As virtual reality is being explored more and more for use in the classroom, the question remains as to how this technology would be funded and what the widespread implementation of this technology would mean for the future of teaching.

POSTER #21

How Does the edTPA Impact New Teachers?

Samantha D'Angelo

Faculty Mentor: Professor Stephanie Schmier
Department of Curriculum and Instruction

The edTPA, or Educative Teacher Performance Assessment, is a performance portfolio being utilized in over 40 states. In New York, teacher candidates are required to achieve a passing score on the edTPA in order to receive licensure. For a childhood-level educator, edTPA explores a teacher candidate's readiness to effectively plan, teach, and assess literacy lessons. Being that the portfolio assessment has been around for less than five years, the edTPA is an assessment that has not been deeply explored in terms of effectiveness and influence on novice teachers who are entering the field. After compiling a comprehensive annotated bibliography of peer-reviewed articles, it was apparent that there was not much research that had been conducted in regard to effectiveness of the edTPA on novice teachers.

Working with Dr. Schmier and Dr. Rosenberg, I sought to discover how the process of completing the edTPA affected former College of Staten Island's School of Education students in their current classroom settings. Six graduates who completed the edTPA shared their dispositions about the process and were given the chance to reflect on the process by watching their videos. The findings of this research highlighted many ways in which the edTPA impacted, or failed to impact, teachers who are new to the field. Many of the research participants felt that the edTPA helped them to be more self-critical. Each participant also described that some sort of performance-based assessment should be completed by teacher candidates, however, they each disclosed disposition toward the way that the edTPA assesses teacher candidates. Other candidates felt that certain professors from the College of Staten Island should have the authority to determine teacher candidate readiness through formal, in-person observations. It seemed that each research participant found aspects of the edTPA to be effective and necessary, yet none of the participants wholeheartedly agreed with the effectiveness of the edTPA as a whole.

POSTER #13

Virtual Reality in Education and Its Impact on the Future of Teaching

Andrea Matteo (Macaulay Honors College)

Faculty Mentor: Professor Stephanie Schmier
Department of Curriculum and Instruction

Advances in technology are being made every single day. As members of society, our lives are continually being improved by new devices that are created. People of all ages depend on technology in their daily lives and even very young children know how to work computers and smartphones (Wohlwend, 2011). As technology is such a large part of children's lives from an early age, it is only natural that it has been incorporated into their education. Many classrooms today are equipped with the usual computers, tablets, and projectors. However, virtual reality is a different technology increasingly being incorporated in some schools (Hansman, 2016).

Although not a new technology, its use in classrooms has taken off in recent years. Virtual reality headsets are being used to take students on fieldtrips around the world and to help students visualize mathematical and scientific models. There has also been some experimentation with completely virtual classrooms. Studies have shown that virtual reality can help students practice skills and difficult concepts learned in class, and it can provide multimodal ways for different types of learners to explore the content (Youngblut, 1998). Virtual reality has also been looked into as a way to help students with different needs. It can be implemented with students with ADHD, students on the autism spectrum, and English Language Learners. As virtual reality is being explored more and more for use in the classroom, the question remains as to how this technology would be funded and what the widespread implementation of this technology would mean for the future of teaching.

POSTER #157

Jose Marti: The Father of Cuban Education

Jonathon Torres

Faculty Mentor: Professor Susan Sullivan
Department of Curriculum and Instruction

This presentation focuses on Cuba's most prolific figure, José Julián Martí Pérez, and the impact that he had on today's Cuban education. To understand how his influence came to light, one must get acquainted with the formation of his early life. Personal events such as his first encounter with rural slavery in Hanábana (1862), his involvement with the "Ten Year's War" (1878-1879), and his fourteen years of living in the United States were all foundations of his philosophy of the ideal education. Through various essays and poems, Martí has left his mark with enduring ideas and phrases that have inspired Cuban intellects, educators, writers and the likes of Fidel Castro and Ernesto 'Che' Guevara.

When I studied abroad in Cuba, I was able to witness first-hand the enormous shadow that José Martí cast over the Island. Furthermore, the main university –where I studied abroad– in charge with the task of producing the future educators of the nation, "La Universidad de Ciencias Pedagógicas, Enrique José Varona" stressed the indispensability of elements from the "martiano pensamiento" in the Cuban education system. The "martiano pensamiento" is practically the way of life for the majority of Cubans. From childhood, Cubans are immediately exposed to the philosophies of past generations. One of those ideas that stem from this philosophy is the right for all men to receive an education, regardless of race and social-class. The vital idea that is underlined by the university was the practice of students learning how to think and do for themselves. This was evident in how the Cuban pedagogical system functioned. The results of José Martí's ideas were positive. A Great part of Cuba's continuous existence is due to the education system that has developed a versatile society. Cuba has one of the highest literacy rates in Latin America.

ECONOMICS

CONFERENCE LOCATION:
BOTTOM FRONT

POSTER #29

How Japan Grew Rich and China Did Not: A Historical Perspective of The Great Divergence in East Asia

Matthew Keegan (The Verrazano School)

Faculty Mentor: Professor Simone Wegge
Department of Economics

This paper compares the economic history of China and Japan to explain how two nations, with similar cultures and institutions, developed on different trajectories following Western intervention. In order to study this phenomenon, emphasis is placed on the East Asian economy during The Great Divergence, a generally-used phrase to describe how Western wealth and industry greatly surpassed the East. The first part identifies the early modern economies of China and Japan by analyzing their trade and maritime policies though the 18th and early 19th century to determine the wealth of both nations in relation to Europe before and after the Industrial Revolution. It will show the impact of the Great Divergence on economic development in East Asia by examining China during the fall of the Qing Dynasty (1644-1912) and China's subsequent failure to modernize. Focus in then placed on the Japanese Meiji Restoration (1868), to evaluate policies allowing Japan to outpace China and eventually converge back with the West. Finally, it shows how the diverging economies impacted schools of thought and global affairs through the 20th century and beyond. By presenting the economic successes and failures of Japan and China, this paper underlines the prominence of East Asia's role in the modern global economy and international relations.

Keywords: Economic History, Economic Development, East Asia, Globalization, China, Japan, Meiji Restoration, Qing Dynasty, The Great Divergence

POSTER #154

The Effects of Raising the Minimum Wage

Jaclyn LaLima

Faculty Mentor: Professor Bryan Weber
Department of Economics

In 2016, New York Governor Andrew Cuomo signed legislation to increase the state's minimum wage to $15 over the course of six years. This may seem beneficial for low wage workers; however, economic theory suggests that raising a price floor such as the minimum wage will decrease the demand for labor—resulting in a labor surplus, or unemployment. This research uses employment and wage data from the New York State Department of Labor. 58 counties in New York and 8 industries within each county were observed between the years 1975 and 2000. Regression analysis was then used to determine if changes in the minimum wage have a significant effect on employment and taxable income base. This research is increasingly important, as raising the minimum wage even slightly may have an impact on business owners, employees, the government, and the economy as a whole. It is essential to understand its effects now so that better forecasts can be made when other states begin raising their minimum wages in the future.

POSTER #106

Financial Globalization and its Macroeconomic Implications

Bharat Sharma

Faculty Mentor: Professor George Vachadze
Department of Economics

Financial globalization can be both a blessing and a curse. On the one hand, increasing international capital flows can support the long-term income growth through a better international allocation of saving and investment. On the other hand, increasing international capital flows can make macroeconomic management more difficult because of cross country transmission of macroeconomic shocks, credit and asset price boom-and-bust cycles, and abrupt reversals in capital inflows, as being experienced by several emerging economies in the recent past. Empirical evidence shows that the international capital flows associated with trade in debt and equity markets have been on an unprecedented "roller-coaster" ride in recent years. Many countries have experienced financial instability, often involving large capital inflows to a given country followed by large capital outflows. Inflows are typically accompanied by increases in output, investment and consumption. Outflows are associated with contraction.

POSTER #107

FDI's Impact on the Developing World

Eric Yang (The Verrazano School)

Faculty Mentor: Professor George Vachadze
Department of Economics

Foreign direct investment (FDI), which usually flows from developed to developing countries, is a major catalyst for capital formation, growth, and development. Gohou (2012), for example, reports a positive relationship between FDI and household welfare even after controlling economic and political factors such as business environment, quality of institutions, political risk, etc. Yet, the benefits of FDI are not uniformly harnessed by different countries, sectors, and communities. The main goal of this research report is to examine the distributional implications of FDI and in particular to understand how FDI affects the poverty rate in developing countries. As reported by Nunnenkamp (2007), FDI can promote economic growth, while it can worsen the income distribution because of the positive effect of growth on wage differential between skilled and unskilled workers.

As a result, FDI may have a negative impact on the poorest section of the population. That is why national governments need to adopt transparent, broad and effective economic policies such as improving infrastructure, education, healthcare, and agriculture in order to reap the full benefits of FDI for development, to aid the poorest proportion of the population, and reduce income inequality.

ENGINEERING SCIENCE AND PHYSICS

CONFERENCE LOCATION:
BOTTOM FRONT

POSTER #102

Peltier Atmospheric Water Generator

Floros Anastasiou, John Donofrio

Faculty Mentor: Professor Alfred Levine
Department of Engineering Science and Physics

In most cases atmospheric generators usually operate in a similar fashion to dehumidifiers. In a dehumidifier air is passed over a cold coil which in turn causes water to condense. Atmospheric water generators operate by utilizing a cold condenser circuit in which, a compressor circulates refrigerant through a condenser and then an evaporator coil which cools the surrounding air. This process lowers the air to its dew point causing water to condense.

Peltier atmospheric water generators, do not use a refrigerator system. In its place it uses an electric system which runs off the current moving through the Peltier Module. The semi-conductive material creates a heated side and cooled side as current is moving through it. The cooled side of the tile then reaches the dew point of the air and water is condensed. In a refrigerant atmospheric water generator the rate of water production depends on the ambient temperature, humidity, and the volume of air passing over the coil. With the Peltier effect however, it does not depend on the volume of the air passing over the coil but rather the rate at which the tile is cooling and being powered.

The Peltier module is emerging new technology and with it is the assumption that a new method of collecting and storing clean drinking water can be created. In addition it is believed that by utilizing the Peltier effect a more power efficient system can be created to yield more water than previous models for atmospheric water collection.

POSTER #103

Improved Inverters for Home Solar Panels

Alex Avila, Steve Huerfano

Faculty Mentor: Professor Alfred Levine
Department of Engineering Science and Physics

According to Solar Industry Research Data, in the last decade, solar has experienced an average annual growth rate of 59% in the US. This growth rate represents the interest that Americans have on photovoltaic system. Data has proved that the system is yet to be perfected. We spoke directly to multiple residential Solar Power owners and one of the biggest complaints that was recorded was inverter issues. Current inverters utilize DC power from the Solar panel cells and inverters the power to AC via a set of solid state switches like MOSFETs. The best and most expensive inverters are managed by a microcontroller and rely on pulse width modulation. They are three types of inverters, Off-Gird, Grid-tied and Hybrid inverters. Our project is focus on a both the Hybrid and Grid-tied.

These two types of inverters are known to overheat and one of the main reasons are because the grid power line signal is asynchronous with the pulse width modulation signal, or in other words the produced AC signal. Therefore, we are attacking this problem by incorporating a phase lock loop circuit to ensure that both signals are synchronous. Furthermore, our research and our studies have led us to create an inverter that eliminates the use of a pulse width modulation and create and more analog approach for producing an AC with the DC power produced by the solar panels.

POSTER #58

Feedback Control of a Robotic Arm

Mobin Uddin Chowdhury

Faculty Mentor: Professor Aleksander Haber
Department of Engineering Science and Physics

The research aims at developing a low-cost robotic arm with three degrees of freedom capable of performing precise positioning and trajectory tracking. The robot will observe the motion of a human arm in real time; it will try to reproduce the motion as accurately as possible. It is designed to perform demanding, dangerous and difficult tasks. This research was supervised by Professor Aleksander Haber. Feedback controlled robotic systems are widely used in automotive, construction and military industries to perform demanding, dangerous and difficult tasks. However, these robots are usually very expensive. Furthermore, their artificial intelligence algorithms cannot easily be modified or upgraded with newer ones, or such modifications are expensive. Universities and high-schools need low-cost, easily upgradable and modular robotic systems equipped with open source programming environments. Due to the fact in recent years the costs of mechatronics components and the 3D printing technology have been dramatically reduced, we are now capable of creating such system.

In the first phase, we have developed a prototype that is controlled using a feedback system, composed of a relative rotary encoder, proportional algorithm implemented using the Arduino microcontroller, Nema 23 stepper motor, Nema 17 stepper motor and Micro step driver to control stepper motor. To increase the motor torque, we designed and 3D printed a 2-stage gear reducer. We also applied a pulley system on the second axis to transfer the torque over a long distance. Additionally, we successfully implemented a PID control algorithm whose purpose is to rotate the joint to a desired angle provided by the encoder. The challenge was that the rotary encoder is of a relative type, meaning that its zero position is determined by the system's initial position. This is solved by including an electromechanical end stop. The second problem we addressed relates to the fact that initially the stepper motor could not produce enough torque to lift the load attached to the joint. This challenge was resolved by designing a spur-gear reducer that amplifies the torque and reduces the rotation speed. In future we plan to build a rotational base and gripper for the arm to be fully functional.

POSTER #92

Probing the Magnetic Activity of Ultracool Dwarfs

Aurora Cid

Faculty Mentor: Professor Emily Rice
Department of Engineering Science and Physics

The chromospheric variability of ultracool dwarfs is still not completely understood. We define objects below 2500 K and less than 80 Jupiter masses as ultracool dwarfs. We want to compare these objects to the Sun and Jupiter to understand the dynamo causing magnetic activity in their chromospheres. Quantification of the magnetic activity and variability can be through a spectroscopic analysis of a dwarf's H-alpha emission line.

The H-alpha emission line is produced through the ionization and recombination of hydrogen in the dwarf's chromosphere and serves as a probe for magnetic activity. We study the variability of the H-alpha emission line by using the Few-Epoch Spectroscopy (FES) component of the Time Domain Spectroscopic Survey (TDSS), part of the Sloan Digital Sky Survey (SDSS) IV. Using this data, we analyze the H-alpha line of these TDSS ultracool dwarfs over timescales of 6-18 years. By studying the chromospheres of ultracool dwarfs on these timescales, we can make comparisons to the solar magnetic cycle and try to understand the process causing their H-alpha variability. Additionally, we can investigate any relationship between variability and stellar age by combining our measurements with age tracers like galactic height and UVW kinematics. We will present preliminary results of this work.

POSTER #153

Bluetooth enabled motorized cart for the Differently Abled

Sixto Encalada and Evan Donovan

Faculty Mentor: Professor Alfred Levine
Department of Engineering Science and Physics

In the United States, roughly 80% of people suffer from lower back pain and other forms of body aches. For our design project, we are building a Bluetooth enabled motorized cart in order to help these individuals. People suffering from these issues have difficulty completing everyday tasks such as shopping, which is something crucial in order to purchase essentials goods that a person might need. However, bending over or even to pick up heavy items, and pushing a full cart can make these aches and pains worse. In all, our project will allow them not to stress any more than they have to when completing simple tasks when they go out and purchase essential products for their household.

This cart will make the task of placing heavy objects into a cart easier in order for the customer to not strain him/herself, this is done by introducing a lift into the cart, the base can come up to a certain level to allow for minimum bending on the customer's part. Another feature is to allow the cart to be controlled by a tablet via Bluetooth. This means, instead of the customer pushing a heavy cart full of items, they can simply use a touch screen. This will be done in order to make the customer's shopping experience simpler, which will be discussed in further detail in our final report.

POSTER #75

Grinding Down Stars and Stellar Remnants into Accretion Disks

Gaia Fabj (The Verrazano School)

Faculty Mentor: Professor Emily Rice
Department of Engineering Science and Physics

Active galactic nuclei (AGN) are powered by the accretion of matter onto supermassive black holes (SMBH). Most accretion models take the form of disks of gas around the SMBH. Stars and stellar remnants also orbit the SMBH. Orbiting stars or stellar mass black holes (sBH) plunging through the disk, experience a drag force, and through repeated passage can have their orbits ground-down into the plane of the disk. Once in the disk, these stars and sBH can collide and merge quickly, leading to predictions of overweight black hole mergers detectable with LIGO (McKernan, Ford et al. 2014). Using two different accretion disk models, grind-down time for stars is estimated and an upper limit to grind down time for sBH is established, as a function of initial inclination angle and radius. Our results can help constrain predictions of the AGN channel for LIGO (McKernan, Ford et al. 2017).

POSTER #100

Laser Triangulation of Overhead Objects

Joseph Familiare, Jack Saintange

Faculty Mentor: Professor Alfred Levine
Department of Engineering Science and Physics

In the last several years, trucks and trailers have failed to consider the height of their own vehicle. Most truck drivers are unaware of the height of an overpass let alone their own vehicle. While passing under an overpass seems simple, there have been a number of accidents occurring all over the U.S. An inspiration for this project is the 11 foot 8 inch bridge in Durham, North Carolina. This bridge has been hit by trucks and trailers due to reckless driving.

Our goal in this project is to prevent accidents occurred while going underneath an overpass. Our device, in concept, should be able to measure the height of an overpass/bridge and notify the driver whether or not their vehicle can travel underneath the bridge or overpass. In addition, this device will enable truck drivers to understand the risk of traveling underneath the overpass without prior knowledge and make the right decision.

POSTER #99

Blocking Pain Signals

Hassan Fares

Faculty Mentor: Professor Alfred Levine
Department of Engineering Science and Physics

Reducing pain signals by electrical stimulation is a standard procedure used to treat back pain. An electrical signal with a very low frequency is necessary to avoid damaging the skin, also it gives the advantage of a wider range of observation. Also, a controlled current intensity is crucial in such procedures to prevent stimulating damage by going beyond the skin threshold. Controlling the signal means that any magnitude can be stimulated for any period of time with high precision and accuracy. Another important feature is making a record of the stimulation process for future references, making the data ready for analysis. This is desired mainly by physical therapists who need to keep a record of their treatment to use at different times. The whole stimulation process is controlled from a user interface on a computer.

POSTER #156

Pharmic Security: An automated biometric medical dispenser

Joseph Ferretti (Macaulay Honors College), Kadiatou Drame-Sheriff

Faculty Mentor: Professor Alfred Levine
Department of Engineering Science and Physics

One of the great epidemics facing our world today is the opioid crisis. This involves the over and/or unnecessary prescription and abuse of opioid medication meant to treat pain. These pain medications are highly addictive; leaving the apitnet needed a high strength to combat pain after continued use. In addition, many people are abusing these medications after being prescribed them to achieve a high and causing damage to the body in the process. The abuse of these medications can lead to turning toward other drugs that cause the same effects, such as heroin. In order to mitigate this crisis, it was the goal of our team to create a solution to deal with the prescription and monitoring of patient on these medications, as well as an aide to help with the recovery period by creating a biometric locked and monitored automatic medication dispenser.

The project involves the creation of a dispenser that will first have biometric identification through use of a fingerprint sensor. This sensor can enroll patients and healthcare staff that will be handling the medication to ensure that only the intended patient is handling the medication. The second process is a system that has the dosage of medication set on an automated system that will help provide protection against overdose on the patient end, and to have a record of medication taken on the end of the healthcare professional. Finally, a video interface will allow for conferencing and visual confirmation that the correct patient is taken the mediation correctly and that unused medication cannot be resold to the market the by the patient to provide a solution to the sale of secondhand opiods to those struggling with addiction. With these processes in place, we can also help, not only with monitoring of prescription medication for pain relief, but also in aiding those needing medication for recovery as well. In place of taking time to head to a recovery clinic, which may not be available to those pursuing a job full time while recovering, they can instead use this device and

communicate with healthcare professionals while receiving the medication they need to stay away from addiction. In this sense, the project will not only help to prevent future patient from struggling with addiction, but also help those who are currently struggling to help create a solution for this large epidemic.

POSTER #59

Feedback Control of an Automated Pen Plotter

Edward Heavey

Faculty Mentor: Professor Aleksandar Haber
Department of Engineering Science and Physics

In various applications, a machine has to produce real-time replications of motions set by a human operator. For example, in surgical robotics, a surgeon must act as an external controller to perform the incisions using robotic arms. The performance of the robotic limbs is preprogrammed, thus, limited in accuracy and precision. Comparable schemes are used in 3D printers, CNC machines and laser cutters. These systems are designed such that, small disturbances in the processes may result in large output errors.

In other words, a 3D printer does not recognize mistakes it has made in its task. As a result, a slight misalignment that occurs at the beginning of a print often renders a product obsolete. This problem introduces a degree of inconsistency and unreliability, but it can be largely reduced by the addition of feedback and embedded software to grant the system with an enhanced ability to learn from previous trials. The goal of this project is to develop an interactive 2D plotter capable of tracing the trajectory set by movement of a human hand. Using image processing and machine learning techniques, the system tracks an object with pixel accuracy; plots the object trajectory in 2D; and identifies the pattern of motion. This is a continuation of the research presented at the 2017 CSI Undergraduate Research Conference. Ongoing research and development will take place in the Applied Mechanics Laboratory at the College of Staten Island, under the supervision of Prof. Aleksandar Haber of the Department of Engineering Science and Physics.

POSTER #139

Photonic Band Gap Materials and Structural Colors in Nature Group

Piotr Marciniec (Macaulay Honors College)

Faculty Mentor: Professor Li Ge
Department of Engineering Science and Physics

There are certain species of fern-like tropical plants that have usual microscopic structures on their leaves. These structures create a photonic band gap that underpins an often vivid and iridescent color pattern. The iridescence allows certain light to penetrate the leaves and affect its development. Meanwhile, several species of arthropods also have microscopic structures on their compound eyes that reduce light reflectivity, enhancing the efficiency of their eyes. Thanks to a similar mechanism, many species of butterflies own their bright colors not to pigments but rather a combination of colored light reflected off the microscopic structure on the scales.

These properties reflect how light interacts with the microscopic structures on the material, whether they are natural or fabricated in a laboratory. The idea of a photonic band gap is analogous to its electronic counterpart, where there is a region in energy that electrons cannot occupy. Similarly, these specific structures mentioned above on the material will create a region that certain wavelengths of light cannot occupy. There are many different examples of this kind that can be found in nature, and this project will focus on understanding how light interacts with these structures. We will simulate different one-dimensional structures, made up of alternating layers of dielectric layers, and irradiate

different wavelengths of light through the structure to see how they interact in MATLAB. Changing certain properties of the structure such as the distance between each layer and the index of refraction of each layer will produce different results. By altering these properties, we will be able to engineer the photonic band gap, restricting certain wavelengths of light and allowing other wavelengths to pass through.

POSTER #98

Proper Posture

Andrew Morchik, Marco Salib

Faculty Mentor: Professor Alfred Levine
Department of Engineering Science and Physics

There are two types of people in the world, those with back pain and those who have not yet experienced back pain. In a goal to prolong such an undesired truth our team is trying to develop a low cost solution to help the future generation with their inevitable back pain. Our proposal is to create an embedded system to monitor a person's posture on the go, outside of any artificial environment. Our experiment involves using an orientation sensor to generate data to be processed using an inexpensive micro-controller. The orientation sensor used is a combined accelerometer, gyroscope, and magnetometer. The combination of these sensors provides parameters for an algorithm to generate a track-able metric for tracking the orientation. A real time electronic notification when their posture is not up to standards.

POSTER #101

Solareign: A Solar Cooking Application

Randa Naim, Dharshika Malwana

Faculty Mentor: Professor Alfred Levine
Department of Engineering Science and Physics

We are now in an age where alternative energy sources are not suggestive, but essential for our planet's long-term welfare. The past decade, in particular, has given rise to an abundance of solar-powered applications including cooking. Solar ovens are being mass produced in an effort to cut down our carbon footprint as well as provide a renewable resource as opposed to the traditional firewood or coal to be used as fuel. The benefits of using solar power to cook, however, far exceed that of strictly helping the planet when it comes to impoverished countries.

In addition to its green thumbprint, solar cooking proves to be beneficial to health as well as women's rights. In undeveloped countries women are still held to traditional roles as home makers, where a significant portion of their day consists of cooking indoors using harsh, non-renewable fuel. The fumes from these types of fuel end up trapped in their cramped quarters to be breathed in by these women and their young children. Additionally, by being expected to feed their families, these women will miss out on other opportunities such as educational advancement or lucrative ventures.

Solar cooking provides a means to eliminate these obstacles: destroying non-renewable resources, health side effects caused by fumes and the violation of women's rights. The sun's natural rays strike the solar oven reflectors resulting in the rebound rays entering the solar oven as a heat source. The trapped heat, in turn cooks the food. It is this simplistic method of cooking that eliminates harsh fuel emittance. Also, this method allows for food to be cooked without much monitoring over a period of several hours. With no urgent need for supervision, the women mentioned previously will be able to do and achieve more outside of the household.

POSTER #60

Feedback Control of a Robotic Base

Melvin Summerville

Faculty Mentor: Professor Aleksander Haber
Department of Engineering Science and Physics

This project focuses on the design, development and analysis of a rotational positioning base. This base will be used in a low-cost robotic system that we have developed. It has been developed from scratch using relatively low-cost components to minimize our costs. The angle of rotation of the rotating base is controlled using a PID controller. The first phase consisted of the development of a low-cost base prototype, which consists of a 3D printed thrust bearing, Makerbeam extrusions, a 3D printed spur gear reducer, an encoder, a Nema 17 stepper motor, a microstep driver, and an Arduino microcontroller. In the next phase, we implemented a PID controller to precisely position the base. Furthermore, we improved the design using a finite element model, which revealed the structural weaknesses of the prototype. With these factors, we developed a realistic model base that exhibits its strengths and weaknesses; we will then create a final design that will eliminate the potential weaknesses of the model and act as a fully functional positioning system for the robotic arm.

There are numerous uses of the rotational positioning base. A simple example of a rotating base is a slowly rotating platform for an item on sale at a store. Towards our application, they can be seen as a means of positioning and rotation for industrial robots across multiple industries such as the automobile, medical, and general manufacturing. Within each industry these robots perform many tasks, ranging from assembly, welding, spray painting, etc. Some key factors to consider regarding these incredible devices are the high speeds and long hours at which they perform such tasks as well as the level of accuracy in their positioning, resulting in systems that easily surpass the capabilities of humans. As they are great assets in the industry, there comes a cost: these robots are expensive. With our research, we plan to develop a fully functional, low-cost robotic arm capable of performing just as well as an industrial-grade robot. By doing this, we hope to prove that a high-performance device of this level can be more accessible.

POSTER #131

Smart Trash Bin

Sheng Wang

Faculty Mentor: Professor Aleksander Haber
Department of Engineering Science and Physics

Dirty residential trash bin has always become an unwelcome insect source. For an owner who does not want to have too much direct contact with this horrible smelly nightmare, I am trying to develop an economically affordable next generation residential outdoor trash bin. I listed a series of reasons an owner has to visit the trash bin, and by replacing the trouble one with a solution of our electric components' combination, the owner would gradually decrease the frequency of this undesired contact. Current design involves using ultrasonic sensor as detector to find the trash bin fullness and a microcontroller will calculate the information feedback. The result will also be processed in a microcontroller to display on an OLED screen using a pre-written program.

ENGLISH

CONFERENCE LOCATION:
WEST LOUNGE WALKWAY

POSTER #11

The Curious Case of Claudio: A Quest for Manhood in Shakespeare's Much Ado About Nothing

Nicolette Guida (Macaulay Honors College)

Faculty Mentor: Professor Katharine Goodland
Department of English

In his play, Much Ado About Nothing, Shakespeare presents to the audience the young and inexperienced count, Claudio, as he returns from war and is forced to face the mental and emotional conflicts of the real world rather than those of the battlefield. Upon his homecoming, Claudio falls in love.

His youth and inexperience hinders his ability to deal with the resulting conflicts that ensue and he becomes susceptible to intense and wavering emotions of love, jealousy and fear. These feelings become a significant component of Claudio's coming of age journey and his progression into manhood is further illustrated through the motif of animal imagery.

Throughout the play, Claudio continuously tries to prove his masculinity to both himself and to those around him. My thesis will develop the idea of Claudio's quest for manhood and his ultimate failure in this quest as marked by his inability to escape the immaturity of his youth, which is partly due to his lack of male role models for appropriate behavior. I will also analyze the audience's response to Claudio and how the dramatic structure of the play contributes to this by placing this character in a situation where the odds are stacked against him.

POSTER #94

On the Use of Bare Verb Forms in the Perfect and the Preterit in Vernacular English

Moné Skratt Henry

Faculty Mentor: Professor Christina Tortora
Department of English

In Standard English, verbs in the preterit form denote a state or action that is completed in the past (e.g. 'I was sick last week'), while verbs in the present perfect denote a state or action that starts at some point in the past and holds until the present moment (e.g. 'I have been sick since last week'). In vernacular English, however, preterit verb forms are frequently used with a present perfect meaning, as in 'I never saw that movie, which has the meaning 'I have never seen that movie,' discussed e.g. in Elsness (1997). The present research seeks to further understand two inter-related aspects of this vernacular English phenomenon, and test my hypothesis, based on the findings of Fisher (2015). According to Fisher, African American English speakers use auxiliary verb 'ain't' both with a preterit interpretation ('He ain't do that' = He didn't do that) and a present perfect interpretation ('He ain't done that' = He hasn't done that). Importantly, she finds that in the case of the preterit interpretation, speakers are more likely to use a bare form of the main verb (e.g., 'see'), and in the case of the present perfect interpretation, speakers are more likely to use a non-bare form of the main verb (e.g.,'saw' or 'seen').

Under my hypothesis, this pattern (bare verb --> preterit interpretation; non-bare verb --> perfect interpretation) should obtain independent of use of 'ain't'. If I am right, then for those vernacular speakers who do not use 'ain't', sentences with preterit verb forms that have a true preterit interpretation are more likely to contain bare verbs, while sentences with preterit verb forms that have a present perfect interpretation are more likely to contain non-bare verb forms. Relatedly, I hypothesize that the main verb in present perfect sentences, e.g., 'I have never seen that movie' will

be more likely to be non-bare. I investigate these questions using frequency data from the "Audio-Aligned and Parsed Corpus of Appalachian English" (Tortora et al. 2017). If the predictions of my hypothesis are born out, I will have shown that the findings in Fisher regarding the use of bare vs. non-bare verb forms with 'ain't' are generalizable to all vernacular English and independent of the form of the auxiliary verb.

ENGLISH/LINGUISTICS

CONFERENCE LOCATION:
WEST LOUNGE WALKWAY

POSTER #132

Prosodic Patterns in Presidential Speech

Olivia Ayala

Faculty Mentor: Professor Jason Bishop
Department of English –Linguistics

In this study, we investigate the use of prosody (rhythm and melody) in public speeches made by former president Barack Obama. We explore patterns related to the following variables: prosodic phrasing (the grouping of words into sound-based "chunks"); prosodic prominence (the placement of sentence stresses); prevalence of different pitch accent types (e.g., low pitch versus high pitch used for prominence marking); pause duration (the length of silent pauses and their relation to upcoming prosodic phrases); and the use of pitch range (variations in pitch maxima and minima over a large stretch of speech). We attempt to identify some of the prosodic patterns and regularities that characterize President Obama's oral presentation style.

POSTER #85

Variability as an Index of Motor Complexity in Consonant Cluster

Lorenza Colonna

Faculty Mentor: Professor Christina Hagedorn
Department of English –Linguistics

Consonant clusters (e.g., /sp/, /sk/) require precise coordination of distinct speech movements, and have been observed to be among the most challenging speech sequences to produce (Dodd, 1995). Accordingly, consonant clusters are acquired by children late in the developmental sequence (Smit et al., 1990) and occur relatively infrequently in the world's languages (Maddieson, 1999). While past studies have posited hierarchies of motor complexity for consonant clusters based on age of acquisition and impressionistic transcription 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. Our study uses kinematic data and two variability analyses to investigate whether clusters comprised of lingual and labial movements (/sp/) are more or less motorically complex than clusters comprised of two lingual movements (/sk/). We hypothesize that clusters requiring coordination of independent articulators (/sp/) will be less motorically challenging than clusters requiring two distinct movements of biomechanically linked regions of the tongue (/sk/). Extensions of this work to clinical populations will be discussed.

GIS SERVICES

CONFERENCE LOCATION:
BOTTOM BACK

POSTER #104

Robbery Rates by Precinct in Staten Island for 2015

Ross Inserra

Faculty Mentor: Professor Nora Santiago
Department of GIS Services

Staten Island is divided into 4 police precincts, 120th, 121st, 122nd, 123rd. The crime rate in Staten Island is rising and becoming more well recognized. This study will examine the number of robberies that took place in each of these precincts in the year 2015. In 2015, the 120th precinct had the most robberies taking place with 227 robberies, then the 121st precinct had 138 robberies, the 122nd precinct had 62 robberies, and the 123rd precinct had the lowest robbery rate at 29.

MANAGEMENT

CONFERENCE LOCATION:
BOTTOM FRONT

POSTER #57

Offshore Financing and Tax Evasion: A Call for Ethical Citizenship Behavior

Menaka Dodampe Gamage

Faculty Mentor: Professor Isabel Rechberg
Department of Management

The tax evasion and the use of tax havens by corporations and individuals in overseas territories are a matter of great concern. This paper identifies reasons behind tax evasion and offshore financing. Analyzing the characteristics of tax havens, the author argues that a country's tax rate is not the only factor that leads wealthy individuals and corporations to evade taxes. This study shows that governance quality, political stability and level of corruption contribute to the creation of tax havens. Whereas minimizing liability, gaining benefits, protecting and increasing asset secrecy, and earning higher interest rates motivates tax evaders to participate in offshore financing. Loss to the federal income and its consequences to individual morality as well as corporate social responsibility will be discussed. While measures have been taken to limit offshore financing, the author calls on ethical citizenship behavior to eradicate tax evasion.

POSTER #26

The Critical Role of Ethical Leadership in Combat

Douglas Encarnacion

Faculty Mentor: Professor Isabel Rechberg
Department of Management

This paper examines the importance of ethical leadership in life threatening circumstances. It explores how ethical leadership can play an important role in moral decision making. During military operations in combat, a leader's personal ethics and motivating language technique can reduce emotional fatigue in fellow soldiers. Since team cohesion is a necessary component for military effectiveness during such hazardous operations, this paper argues that ethical leadership has a profound impact on withstanding emotional exhaustion by way of team cohesion. The author will draw on his own experience as a Non-Commissioned Officer in the United States Army during a one-year deployment in Iraq. It was his responsibility to lead by virtue, motivating and leading his team to achieve critical objectives, keeping their welfare as priority. Drawing on motivating language theory, self-mastery, emotional intelligence, and moral maturity, the author will develop an ethical framework that can be used for moral decision making.

POSTER #33

Do Human Resource Systems Institutionalize Gender Inequality at the Workplace?

Melissa Ravelo

Faculty Mentor: Professor Isabel Rechberg
Department of Management

As a woman growing up in the United States of America, at the start of my professional career, I observe the continuous struggles my fellow citizens are experiencing in the workplace. Recently the multinational banking company HSBC disclosed a median gender income disparity of nearly one third in the United Kingdom. These recent findings emphasize that inequality in the workplace is a continuous and imminent problem, especially when women represent nearly half of the U.S workforce. The purpose of this study is to evaluate current human resource systems to identify whether human resource procedures contribute to the issue. Focusing on unequal pay, maternity leave, the glass ceiling, and sexual harassment, I will investigate whether sexual inequality is institutionalized in the workplace and provide suggestions for human resources professionals to remedy the injustice.

MARKETING

CONFERENCE LOCATION:
BOTTOM FRONT

POSTER #38

The Glass Ceiling Before The Glass Ceiling: How the Marginalization of Black Women in Corporate America Presents a Barrier to their Success

Moet Askew (The Verrazano School)

Faculty Mentor: Professor Robert Allen
Department of Marketing

The recent high-profile dismissal of Melissa-Harris Perry and Tamron Hall at MSNBC illustrates the difficulties that African American women experience in corporations, especially those with predominantly white work environments.

This article will explore some of the root causes of the marginalization of black women in the corporate workplace. Furthermore, despite being statistically the most educated group in America, black women are often the most marginalized in corporate America for a number of reasons, mostly stereotypes. This article explores the ways in which racial stereotypes have affected the black woman's success in corporate America. The discussion depicts the way in which black women responded. Throughout independent research of primary and secondary sources, including Melissa Harris-Perry's work Sister Citizen: Shame, Stereotypes, and Black Women in America, this research will expand the discussion on the experiences of black women working in predominantly white settings and coping with racial identity and inclusiveness in the workplace.

POSTER #124

Digital Marketing vs. Traditional Marketing

Jenea Castellano

Faculty Mentor: Professor Daniel Gagliari
Department of Marketing

This paper attempts to explain the differences between Digital Marketing and Traditional Marketing by examining the features of both strategies. What is their impact on society, and which one works better? Is Digital marketing the most efficient platform in our technological world? Is traditional marketing still more efficient for selling certain products? These questions will be answered through secondary research. This paper will elaborate on the fundamentals of both Digital marketing and Traditional marketing to get a better understanding of both.

There are many platforms within both marketing strategies. For digital marketing, there is SEO, blogging, social media and email marketing. In traditional marketing, there are print ads, radio and TV spots, posters and billboards, etc. Both strategies also have their faults, which will also be examined in this paper, to help identify which marketing strategy is the stronger one.

POSTER #16

Identification of Privacy Disclosures in Social Media Posts

Christopher Costello (Macaulay Honors College)

Faculty Mentor: Professor Paolo Cappellari
Department of Marketing

Social media websites, such as blogs, Facebook and Twitter, provide people with platforms to disseminate information via the Internet. While these media of communication undeniably have their advantages, they also put people at considerable risk. To name just a few examples of instances where the information that a user shares can be to their detriment: job recruiters tend to judge

candidates based on the content that they share, criminals can leverage information regarding a person's whereabouts to burglarize their home, and personally-identifiable information can be used by identify thieves to steal a person's identity. While most social networks offer a rudimentary set of privacy controls, such as whether to make user content visible to the entire Internet or only to networked "friends" or "followers," they do little to regulate the actual content of what they enable their user to share. Despite this, many people continue to unwittingly disclose private information or are utterly unconcerned with the privacy of what they share. For this reason, actionable privacy awareness and protection mechanisms are of growing importance. In my research, I propose an approach to assess the privacy risk of social media posts based on machine learning techniques using a crowd-sourced view of what constitutes private information. My approach yields a model capable of automatically detecting private information in Twitter posts. My model can be used preventatively, to detect private information in a post before it is submitted in order to warn the user. Alternatively, it can be applied to a Twitter user's timeline to gauge their confidentiality and used in conjunction with topic modeling to summarize the nature of their privacy disclosures.

POSTER #63

Sentiment Analysis of Social Netizens

Christina Dequieno (The Verrazano School)

Faculty Mentor: Professor Soon Ae Chun
Department of Marketing

Sentiment analysis and opinion mining have a wide set of applications in businesses, politics and healthcare to understand the stakeholders. In this study, we analyze the mood and emotions of citizens in the United States, applying the sentiment analysis on a large-scale social network data. The geographic, temporal and topical analyses may bring many insights into understanding population-level emotions of citizens. We employ Data Science methods to collect the Twitter datasets collected using Twitters API and analyze them using the sentiment analysis package Syuzhet in R Studio.

We determine the emotions of the people in each State. Social Media now allows us to have a large base of opinion data for analysis. The dataset used in this study is a collection of Tweets consisting of personal thoughts, opinions or just a simple emoji. The data from Twitter allows getting different opinions from all social and interest groups. This helps prevent bias when running the sentiment analysis. The sentiment analysis classifies each Tweet into negative and positive emotional categories. The machine classified Tweets are then visualized according to its location on a map to show the positive and negative emotional scales in each state of the US. The temporal analysis and topical analyses will reveal population level feelings related to times and days of the week, and their prominent linguistic expressions.

POSTER #12

Beauty Consumption in the Age of Social Media

Valona Frangu

Faculty Mentor: Professor Dan Zhang
Department of Marketing

In an era when social media has started to play a huge role in our everyday lives, people use social media in almost every aspect of their lives. Social media is rapidly growing and has become an outlet for anything and everything. The increasing use of social media has changed the way businesses and marketers communicate with consumers. Media outlets such as YouTube, Instagram and Snapchat have made it easier for companies to connect to their customers and reach them like never before.

Beauty consumption in the age of social media is still very new. The way companies market their beauty products has changed over the years. Indeed, social media has started to pose a threat to traditional advertising and has allowed for a shift in beauty consumption behavior. It has given beauty companies a chance to reach their consumers on what has grown to be a massive media outlet. What most beauty companies have done is to use big name social media celebrities, reaching out to them in order to get a product out there for everyone to see.

With its focus on beauty consumption in the age of social media, this research uses secondary data and aims to understand the relationship that exists between the consumer and big name beauty companies. The way these companies position themselves on all aspects of social media allows consumers to know about the company and in the end gain loyalty that companies look for. The research seeks to explain what social media does to help beauty companies, how consumers are using social media regarding beauty products, and how social media has altered beauty consumption amongst consumers. Getting to understand how social media has changed will give companies a boarder view of how they can use social media to draw the attention of consumers.

POSTER #54

Monetary Policy During the Great Recession

Crysta Frassetti

Faculty Mentor: Professor Alan Zimmerman
Department of Marketing

The purpose of this paper is to analyze the actions that were taken by two major central banks, the European Central Bank (ECB) and the Federal Reserve (FED). It is important to compare the monetary policies of strong central banks in order to determine if they move in unison, and if not, should they?

My report summarizes the actions taken by both the FED and the ECB during the Great Recession and then proceeds to compare the policies. Having a functioning and effective monetary policy is extremely important to a country's well-being because a poor or ineffective monetary policy can cause high inflation, high unemployment and a decline in investment spending. Including current monetary policies was an integral part of this work in order to see if the strategies of these banks have changed at all or if they are still following the same system. Economists must study monetary policy history, especially during times of crisis, in order to prevent repeating mistakes already made in the past.

POSTER #67

Business in Cuba

Mark Girgenti

Faculty Mentor: Professor Alan Zimmerman
Department of Marketing

Cuba is an island that is 90 miles off the coast of Florida and is roughly the same size. It is one of the most famous Latin American countries in the entire world and is known for their rich culture of Cuban cuisine, music, dance, and cigars. Today, tobacco products are among the most counterfeited goods in the world and with the increase in tourism in Latin America, fake cigars are becoming more popular. Cuba is known for their strict laws on industrialization and their geographical location, which makes it strategic for tobacco growth. This makes every individually hand rolled cigar-one of a kind. Historically, tourists have always been at a disadvantage when confronting a fake Cuban cigar. Using common knowledge of what flaws fake cigars have today, any amateur cigar connoisseur can

detect the usual present-day Cuban cigar counterfeits. In this paper, you will learn more about the differentiation of counterfeit and real security bands, how Cuban cigars are made, types of Cuban cigars, and the history of the cigar industry in Cuba. This paper will also show the rich culture of Cuba and the ever-growing industry of counterfeit tobacco.

POSTER #28

The Effects of Politics on Consumers' Behavior

Michelle P. Lvovich

Faculty Mentor: Professor Dan Zhang
Department of Marketing

In the current controversial political environment, companies are looking to see how this can affect consumer behavior. The new voting generation possesses strong beliefs about their preferred political alignment, and advances in technology are making it easier for everyone to share their beliefs. This type of environment paves the way for unity against certain unfavored political parties and any company that may be affiliated with them. Examining the behavior of consumers during critical political moments throughout history helps companies determine what steps they should take to avoid controversy. This goal of this research is to understand the mindset of consumers during key political events over time, and the relationship this has with various brands and companies.

POSTER #53

The Effects of Brexit on the Republic of Ireland

Tyler Crespi (Macaulay Honors College)

Faculty Mentor: Professor Alan Zimmerman
Department of Marketing

On June 23, 2016, the United Kingdom (UK) held a referendum that has since caused major political, economic and social impacts throughout the world. The vote will result in the British exit (Brexit) from the European Union. This decision represents a major transition for the fifth largest economy, according to Gross Domestic Product (GDP). Many uncertainties have been raised regarding what the UK landscape will look like in the post-Brexit era. The Republic of Ireland is the only EU nation that borders the United Kingdom. These nations have a very tight relationship due to its close proximity, shared common language, and many other factors.

The purpose of this paper is to examine the current economic relationship between the UK and the Republic of Ireland. It will also look at how the Brexit decision will affect Ireland in both positive and negative aspects. The future of Europe is uncertain, as the UK may potentially be the first domino to fall in the collapse of the European Union.

POSTER #79

Modern Saudi Arabia: Implementing Women's Rights

Viktoriya Vorobyova

Faculty Mentor: Professor Alan Zimmerman
Department of Marketing

The status of women in Saudi Arabia was historically established by traditional and religious practices that are frequently endorsed by the law. Women in Saudi Arabia are considered subordinate to men and societal limitations severely restrain their status. Thus, my paper consists of detailed research concerning how women in Saudi Arabia are perceived within their nation, as well as how certain historical implications link together with the current state of affairs in the Kingdom of Saudi Arabia. My paper additionally exploits the various laws and regulations, which were specifically targeted towards women; until recently, women did not even have their own identification cards separate from those of their fathers or spouses. Furthermore, aside from educational and work related limitations that women in Saudi Arabia face on a daily basis, they are still not allowed to legally operate a vehicle. Nonetheless, the law to permit women to drive has been passed and will go into effect in June 2018.

My research proves that although the Saudi government has been attempting to impose on some regulations regarding advancements in women's rights, the harsh avoidance of women's separation from public participation is among the most important issues that the nation is facing. Thus, I carefully examine certain socioeconomic as well as political measures that influenced and weighed-in to determine a women's position in the Kingdom's civilization. All in all, I came to a conclusion that in order for women in Saudi Arabia to defeat such strong and unjust male predominance, they must all join together and defend their birth given rights to equality.

MATHEMATICS

CONFERENCE LOCATION:
BOTTOM BACK

POSTER #52

Analysis and Numerics of the Spatially Homogeneous Fokker-Planck-Landau Equation

Robert Ferrando (Macaulay Honors College)

Faculty Mentor: Professor Stephen Wollman
Department of Mathematics

We consider the spatially homogeneous Fokker-Planck-Landau equation. This equation is not entirely relevant to physics as the electromagnetic field is not included. The purpose for considering this equation is to study by itself the Landau collision operator. First, analysis is done on the equation to verify the conservation of mass, momentum and energy. We also verify that the kinetic entropy is a non-increasing function of time. The next step in the analysis is to show that the Fokker-Planck-Landau equation can be expressed in the form of a second-order parabolic-type partial differential equation with coefficients that involve integrals of the phase space distribution function. In this form, we can approximate the equation using finite difference methods for parabolic-type PDEs. We will then write a Fortran program to numerically approximate the Fokker-Planck-Landau equation in the parabolic form, and verify computationally the conservation and entropy laws.

MEDIA CULTURE

CONFERENCE LOCATION:
WEST LOUNGE

POSTER #150

Remakes and Nostalgia: Strategic Practices in Contemporary Hollywood

Tugba Camci, Katherina Opazo

Faculty Mentor: Professor Jillian Baez
Department of Media Culture

The film industry has been creating remakes of original films for the prospect of financial gain. The term "remake" is used to reference a film, which uses an earlier version of that film to re-represent and explains a different time, and film creators make use of these previous narratives and experiences. Film creators have developed an art of imitation, which comes in the forms of remakes. The mold for films has been altered to suit a formula by the studios, which is influenced by nostalgia. The formula in which the industry is so prone to using comes from the backing of quantitative analysis, to decrease the financial risk. This allows for a margin of safety, since the formula, being a fixed form and precedent for why and how films are made, is grounded upon risk. This serves as a tactic for film creators to minimize the risk in a profit-driven film industry. Tapping into Nostalgia and imitation of original films is the safest way of making a profit for the film industry.

POSTER #152

The Aesthetics of Reality Television and its Relation to Modern Day Capitalism

Elizabeth de Stefano (The Verrazano School)

Faculty Mentor: Professor Edward Miller
Department of Media Culture

This study outlines the relationship between the increasing conglomeration of media and tech companies and the growing use of partnerships or alliances within competition-based reality television shows. Since the Telecommunications Act of 1996, media companies such as the Walt Disney Company, Viacom and 21st Century Fox have dominated the media market, forming an oligopoly. Similarly, following this trend is reality television. In the early days of shows such as Big Brother, alliances and strategy was not a focus; rather, it was the idea of a group mentality and relationship dynamics between the contestants. Fast forward to the latest season, shows are cut throat and the contestants go into the games immediately strategizing, as well as forming powerful alliances within the first four episodes.

In order to draw comparisons between the two, statistics of media industry trends from 1996 to the present are referenced as well as a content analysis of three reality television shows (Big Brother, The Amazing Race and Survivor). To see how drastically the structure of these shows has changed, the first four episodes of an early season and the first four episodes of the latest season of each show are analyzed based on character portrayal (music selection used during a certain segment and quotes used in post-production, etc.), including the scenes and issues emphasized within the plot. To further understand reality television's impact, scholarly works on the topic are also discussed. The study finds that there is a clear pattern of conglomeration in both the media industry and within the production of reality television.

POSTER #128

Project "Bruh"

Adrianna Najchow

Faculty Mentor: Professor Valerie Tevere
Department of Media Culture

My project will be focusing on one "object" specifically the informal word "bruh." By highlighting it in multiple art forms and trends, I want to investigate its meaning and challenge /showcase my ability to work within different art forms. I have decided to represent the word using different media forms: a poster, brand logo, sticker, collage, photography and motion graphics/gif. These various art forms will be used to show in design that one concept can be broken down and transformed in numerous ways, leaving space for multiple interpretations. The word "bruh" itself has multiple meanings, and is used interchangeably with the word "bro," and "bruv," etc. It is noted to be around since the mid-to-late 2000s, with the first Urban Dictionary entry submitted by Ludwig Van on December 19, 2003 (some say it has been around since the early 20th century "perhaps originally representing an African-American pronunciation of brother" https://en.oxforddictionaries.com/definition/bruh). Although the most common association and use of the word "bruh" as a greeting, reference to a close friend or a brother is where I place my focus.

This project will add different perspectives to a word that is often marked as teen slang, and not recognized for its deeper meaning. By challenging it in different art forms, I want to show that a word that can be thought of as worthless can represent social issues such as masculinity and femininity as well as be present in multiple visualizations.

NURSING

CONFERENCE LOCATION:
BOTTOM BACK

POSTER #37

Smoke Inhalation

Kellyanne R. Caruso

Faculty Mentor: Professor Regina Gonzalez-Lama
Department of Nursing

Smoke inhalation is the number one cause of death related to fires. Smoke released by any type of fire, be it forest, brush, crop, structure, tires, waste or wood burning, contains a mixture of particles and chemicals produced by incomplete burning of carbon-containing materials. This smoke contains carbon monoxide, carbon dioxide, and particulate matter (PM or soot). Inhaling carbon monoxide decreases the body's oxygen supply when traveling deep into the respiratory tract. Respiratory irritants, systemic toxins, and heat burn the respiratory pathways of these victims. Acute effects of inhaling smoke can occur in a short time. Airway obstruction and hypoxia needs to be assessed and treated with oxygen, mechanical ventilation, airway management, humidification, and constant observance.

Carbon monoxide or cyanide intoxication must not be overlooked, for it occurs when smoke is inhaled in an enclosed area. If trapped inside a burning structure, harmful chemicals found in smoke may come from burning rubber, coal, plastic, or electrical wiring. Chronic health effects from exposure to the components of smoke containing fine particles has been associated with increases in cardiovascular disease and mortality.

Diagnostic bronchoscopies and chest x-rays give visual imaging to show the extent of inhaled injury, better preparing the patient for the correct form of treatment. Abg's or arterial blood gases are taken to test for the amount of oxygen and carbon dioxide in your blood. Pulmonary function tests measure how much air you breathe in and out over a certain amount of time showing how well your body is using oxygen. Treatment for smoke inhalation includes bronchodilators, steroids, antibiotics, antidotes, and medications to treat pain, swelling, or fever. Smoke inhalation is a serious injury and treatment is needed as soon as possible, for smoke may damage your lungs and cause breathing problems that may in turn affect your heart and brain, cause permanent lung damage, or even death.

POSTER #32

Stigma of Bipolar Disorder

Gabriella Clemente (The Verrazano School)

Faculty Mentor: Professor Barbara Schiano
Department of Nursing

The purpose of this paper is to educate and bring awareness to the public about the prevalence of Bipolar disorder and how their actions can negatively influence others in the community. This paper will define Bipolar disorder and will discuss the different types and classifications of each disorder. It will further discuss symptoms and symptom management as well as identification of relapse. It will examine ways in which individuals are stigmatized and how that affects their overall well-being and day-to-day functioning. It will also discuss how client's lives are altered and some therapeutic interventions for those affected. This paper will further suggest interventions to reduce stigma surrounding Bipolar disorder and educate the public in hopes of encouraging clients to seek treatment without fear of stigmatization. This paper is meant to give guidance to those that are not knowledgeable on how to act around people with mental illnesses.

POSTER #9

Delirium Tremens in Alcohol Withdrawal

Catherine Cunningham

Faculty Mentor: Professor Regina Gonzalez Lama
Department of Nursing

In critical care patients, management of alcohol withdrawal can be challenging. Patient histories of alcohol consumption can be incomplete, not detailed, or not obtained at all. Furthermore, patients with sepsis, intracranial hemorrhage, meningitis, stroke, or traumatic brain injury may present with symptoms similar to alcohol withdrawal. Patients who stop drinking abruptly are at risk for alcohol withdrawal syndrome. Symptoms develop within hours from the last drink and progress without treatment.

Mild symptoms include tremor, anxiety, and diaphoresis. If left untreated, symptoms will progress to confusion, hallucination, and seizures. Delirium tremens is the most severe complication from alcohol withdrawal. Rapid identification through adequate patient histories and timely pharmacologic therapy is essential. The CAGE and AUDIT questionnaires are used to identify alcohol use disorders. Patients with a history of alcohol withdrawal syndrome or delirium tremens are most at risk for delirium tremens. Benzodiazepines are the first line of treatment. However, in patients that have progressed to severe withdrawal or delirium tremens, adjunctive medication may be needed.

POSTER #137

Narcan OD

Mario Fontana

Faculty Mentor: Professor Regina Lama
Department of Nursing

The National Survey on Drug Use and Health states approximately 116 people die every day from opioid related drug overdoses in The US. In the late 1990's, pharmaceutical companies assured members of the medical community that opioids did not possess the potential for addiction. This belief led to increased prescription rates, which inevitably led to an increase in opioid misuse and abuse. According to hhs.gov, opioids were involved in 42,249 deaths in 2016, and opioid overdose deaths were 5 times higher in 2016 than in 1999. Opioid related deaths are also up amongst both men and women, all races, and adults of virtually all age groups (CDC.gov). Opioid medications can cause a wide variety of side effects; however, the most concerning side effect of opioids is respiratory depression. Opioids activate opioid receptors at specific sites in the CNS that control respiratory rhythm. These effects are potentially fatal; however, they can be reversed by the opioid receptor antagonist Narcan.

Narcan works as an opioid antagonist to block opiates from activating the mu receptors in the brain which slows breathing. Narcan is often given in multiple doses because while it removes the opiate from the receptor, it does not remove the opiate from the brain. Narcan does not have to be administered by a healthcare professional but has its home alongside other critical care medications. Many complications result in drug overdose requiring hospitalization and sometimes admission to a critical care unit due to depression of the respiratory system and prolonged immobility. The American Journal of Emergency Medicine states, "extracorporeal membrane oxygenation is being increasingly used for patients with severe ARDS refractory to otherwise conventional management". (Kohl,B, et al, 2018). Reasons for intubation to support respiration, to preserve cardiac and brain function, acute lung injury, aspiration PNA. In a retrospective study of charts from 1987 to 2006 revealed "ALI and aspiration pneumonia were the most frequently observed respiratory complications after acute heroin overdose requiring intubation and ICU admission. Mortality rate was 14.2 percent and was attributed to septic complications and irreversible brain damage"(Grigorakos, L. et al 2010).

POSTER #36

Early Detection of Delirium in Acute Care Settings

Lesya Hrytsiv, Nadiya Khmil, Linda Osei, Almira Ranovic

Faculty Mentor: Professor Regina Gonzalez-Lama
Department of Nursing

Delirium is a form of acute brain injury that occurs in 60 to 80% of mechanically ventilated ICU patients and 20 to 50% of nonventilated patients. It is characterized by a sudden change or fluctuation in baseline mental status, inattention, and either disorganized thinking or an altered level of consciousness. Delirium can significantly decrease survival and worsen quality of life after critical illness through long-term complications such as cognitive and functional impairment. Patients who experience even 1 day of delirium suffer from poor clinical outcomes and accrue higher ICU and hospital costs.

Despite the multifactorial nature of delirium, it is not surprising that multicomponent ICU-level strategies have had better success with reducing the duration of delirium compared with pharmacologic strategies that address only a few ICU-level risk factors. Although, the level of intervention should be based on the score from the assessment. Frequent assessment should be done by using validated assessment tools, CAM-ICU, 0-10 NRS or RASS. Risk factors for delirium can be divided into predisposing factors (host factors) and precipitating factors. They include: pain management, agitation management, sedation management, early mobilization, sleep promotion, reorientation.

Delirium is a source of significant morbidity and mortality in critically ill patients. Although 1 day of delirium is associated with poor outcomes, a longer duration of delirium is associated with even worse outcomes. Early identification of patients at risk for developing delirium and of patients with delirium is the priority for effective delivery of preventative and therapeutic interventions. Delirium assessments should be part of the ICU admission physical examination and should be incorporated into the daily work plan.

POSTER #35

Nursing in Mass Casualties

Cassandra Hyppolite, Zana Barrow, Maria Decesare, Tema Regist

Faculty Mentor: Professor Regina Gonzalez-Lama
Department of Nursing

Nurses play a pivotal role in the maintenance of health for all human beings. Our duty is to care for our patients holistically and improve their quality of life. Although there are many tasks we perform, they can be challenging due to the different obstacles we may face at any time. In cases of mass casualties, these challenges escalate greatly. Unfortunately in our society, erratic, harmful events do occur, and as a nurse, it is important to always be prepared and have the appropriate resources and knowledge of what needs to be done. Mass casualties may be a result of natural disasters, bioterrorism, the use of weapons, or other trauma caused by nature or human actions. When these events occur, nurses are in a perplexing situation because the care they need to provide differs from usual interventions, and critical decisions of life and death are necessary. In this conducted research, there will be a discussion on how nurses must prepare, perform, and utilize available resources, specifically during cases of bioterrorism, natural disasters, or terror attacks. We will also focus on evaluating the effectiveness of protocols during these mass casualties.

POSTER #15

Mobile Stroke Unit

Achaea Manzano-King, Madeline Drago, Helen Fok, Tina Pontebbi

Faculty Mentor: Professor Regina Gonzalez-Lama
Department of Nursing

Strokes are the fourth leading cause of death in the United States today according to the American Heart Association. The time from the onset of symptoms, diagnosis, and treatment can mean the difference between life and death or permanent disability. Strokes mostly occur in persons over 55 years of age but there has been an increase in much younger people including children. The administration of life saving medication, TPA, which is needed in 88% of stroke cases, can only be given within a 3-hour window from onset of symptoms. The mobile stroke unit (MSU) saves precious time by assessing the patient in the field by taking vital signs, assessing signs and symptoms, and doing a CAT scan. The MSU looks like an ambulance but is equipped with a CAT scan machine and special telecommunication that is done with an on-call neurologist. The unit is manned by an EMS driver, paramedic, critical care nurse, and CAT scan technician that monitor and treat patients in the field while taking direction from the neurologist via telecommunication. In urban areas where acute care centers are fewer and not geographically close, this innovation is priceless for a stroke victim. New York City currently has an MSU being dispatched from NY Presbyterian Hospital.

Research is being done about the efficiency of the timing of the treatment and patient outcomes. There is a study that is following patients that have been treated by the MSU; the post evaluation is every three months to evaluate long term benefits. Another research study with stroke victims showed an increase in treatment time, with MSU treating patients at 34 minutes and the patients taken to hospital being treated at 52 minutes. The organizations that have MSU are currently collecting data and evaluating cost efficiency and effectiveness of clinical outcomes. The MSU is a medical advancement that can change outcomes and long-term effects for stoke patients in years to come.

POSTER #18

Burn Wound Infections

Jeremy Merchant (Macaulay Honors College)

Faculty Mentor: Professor Regina Gonzalez-Lama
Department of Nursing

Burn wound infections, one of the most serious complications after acute burn injury, increase the morbidity and mortality in patients. When a person is burned, the immune character of the skin weakens and is exposed to many pathogens to invade the body, making them susceptible to numerous infections. Infection rates have declined because of modern health care practices, yet some hospital's burn unit infection rates have increased. Burn wound infections are caused by patient's own normal flora and/or inappropriate medical practices by healthcare workers. The focus of medical care should be to prevent infections in these vulnerable patients.

Prevention of burn wound infections can be done by a thorough assessment of the burn wound, early identification of signs and symptoms of infections, blood cultures to identify the pathogen and initiation of treatment accordingly, maintaining standard precautions, decontaminating equipment and surfaces after patient care, isolating patients with severe burn injury and those being transferred from other hospitals or units, and enforcing strict aseptic techniques in patient care. Infections cause not only problems for the patient, but also increase cost for the hospital. Therefore, the hospital should enforce strict regulations and implement strong hospital policies that prevent infections in patients and subsequently the unit.

POSTER #19

Data Collection Process

Jeremy Merchant (Macaulay Honors College)

Faculty Mentor: Professor Dawn Fairlie
Department of Nursing

Data collection is the process of collecting and gathering information about specific variables that enable researchers to answer research questions, test hypotheses, and assess outcomes. Accurate data collection is critical to maintain the integrity of the research study. Data collection is a rigorous procedure that involves several documented steps. A novice researcher must be properly trained in the methodology to follow to follow proper protocol. Mentoring by an experienced researcher in this process is essential. This project focuses on the mentored process of data collection. After obtaining IRB approval, established principles of data collection and the data collection process will be presented as a poster.

POSTER #96

Central Line-Associated Bloodstream Infection

Jessica Post, Christina Gargiulo, Megan Coleman, John Lin

Faculty Mentor: Professor Regina Gonzalez-Lama
Department of Nursing

Our poster board will focus on the problem of central line associated bloodstream infections also known as CLABSI. CLASBI infections are one of the most common causes for morbidity and mortality for hospitalized patients and account for nearly 1.7 billion dollars in medical costs yearly. Central line infections are a modifiable adverse event in patient care and the reason we have chosen this topic for our poster board. We will explore the causes of CLABSI infections such as improper skin preparation before insertion, inappropriate site insertion, not practicing strict hand hygiene and incorrect insertion techniques. All the causes I have mentioned have shown to have a direct link with the development of central line infections and with proper precautions and protocol it is believed we can decrease the prevalence significantly. Also included in our poster board will be interventions specific to bedside nursing to assist our colleagues in the correct way to properly care and insert central lines with minimal to no complications ideally. As a solution we will discuss formulating safety cultures in hospitals and facilities allowing staff to feel comfortable to discuss situations where they believe their actions may have contributed to an infection. Other interventions to be discussed include staff training, error reporting systems and surveillance programs that have been implemented and their success rate.

POSTER #81

Safe Patient Handling: Implementing a No-Lift Policy

Kasey Reems (The Verrazano School)

Faculty Mentor: Professor Barbara Griffiths
Department of Nursing

Musculoskeletal injuries are the most common cause of work related injury to all health care workers. Workforce related injuries directly affect the health, as well as, work performance of nurses. Improper technique, lack of appropriate equipment and absence of a clear plan to prevent injuries obtained from lifting or moving patients contributes to an increase in this problem. A review of the literature examines the prior, current and future issues regarding this problem and explores safe handling, stakeholder education and a “No-Lift Policy.” The impact on the political, social and monetary effects

resulting from this issue are explored. Statistics presented support the need for a change in this preventable dilemma. Rosswurm and Larabee's "change model" using evidence-based practice includes six steps directed to guide nurses and other healthcare professionals to implement changes that will address prevention of musculoskeletal injuries. The motivation, interventions, implementations, possible outcomes, integration and maintenance of this change in practice provides a possible solution to the safe handling and prevention of injury to the healthcare workforce, most specifically nursing.

Impact on practice: the "No-Lift Policy" programs serve to increase awareness for the prevention of musculoskeletal injuries for all healthcare workers, specifically nursing. The positive outcomes are decrease in job related injuries, safe work environment for caregivers, decrease compensation costs, decrease sick time, and prevention of injuries to patients, such as shearing, skin tears, and those compromised that have poor healing (Fragala et al, 2005). In conclusion, implementing a no lift policy will take time, funding, and patience but will benefit the staff, patients, and the facility where it is implemented. Rosswurm and Larabee's six-step change model demonstrates how policies may be integrated and evaluated.

POSTER #47

Cultural Immersion and Global Health: Levels of Care in Costa Rica Group

Joeffre Ubalde

Faculty Mentor: Professor Regina Lama
Department of Nursing

This abstract summarizes the observational experience in the Cultural Immersion and Global Health Nursing related to the subject matter of the Levels of Care in Costa Rica. This focuses mainly on the design and structure of the health care system. The international students from College of Staten Island of New York, USA, had the privilege to visit various types of facilities that provided care to the many different communities of Costa Rica. The students gained a better understanding of the three levels of care by observing consultations, participating in house visits, scrubbing into procedures, and were able to observe the process of admission through the discharge of a patient in every different facility and level of care. The level one facility was the multiple EBAIS located in various communities where students observed consultation and home visits. The level two facility was the Coopesian where a tour was held and a discussion about the services and specialties provided by the facility. Lastly, the level three facility was the Calderon Hospital where students had the opportunity to visit various departments and observe the admission to discharge processes of a patient. In addition to the visit, the students had the opportunity to meet various health care providers that explained the health care system and the types of care provided within their facilities. Lectures were held in order to educate the students about how the financial system worked as well as the struggles and achievements of this developing country in health care.

POSTER #86

Assessing and Managing Pain in Pediatric Patients with Sickle Cell Anemia

Casey Wade (The Verrazano School)

Faculty Mentor: Professor Barbara Schiano
Department of Nursing

Pain is a universal, but subjective phenomenon that affects many patients with various disease processes or conditions. For instance, pain can stem from physical or psychosocial issues. Many tools, proven effective through evidence-based practice, for assessing a person's pain are utilized in a clinical setting. There is, however, no uniform pain threshold that exists, which poses a problem for health care providers and nurses. Moreover, pain is expressed and perceived differently among individuals, across cultures, and especially by children. Adding to this the factor of a chronic disease such as sickle cell anemia, which affects a significant amount of children worldwide, alters a child's perception and display of discomfort. Pain is thus even more difficult to gauge and treat effectively. The purpose of this paper is to research the ways in which pain is assessed and managed in children with sickle cell anemia through a comprehensive literature review. The desired result is to discover how to adequately and appropriately measure and treat pain in a vulnerable population who cannot advocate for themselves.

PERFORMING AND CREATIVE ARTS

CONFERENCE LOCATION:
WEST LOUNGE WALKWAY

POSTER #108

La Isla Abandonada

Crystal Frias

Faculty Mentor: Professor Chris Verene
Department of Performing & Creative Arts

I am exhibiting a research project about the island of Puerto Rico, before and after Hurricanes Irma and Maria. I have previously made a documentary project about Puerto Rico in 2016. For the project I am exploring my heritage as well as the people with whom I identify culturally. How the place they once called their home once was as well as the aftermath of the island after Hurricanes Irma and Maria. Through my previous photographs I capture the individuals as well as the place and environment around them, to see where culture falls parallel to their individuality. I documented some places on the island that have been abandoned, homes that people were walking away from because of Puerto Rico's economic state. I also captured daily life around the island, cities and smaller towns as well as the people who make up the beautiful island. Throughout this research project I will continue capturing the people of Puerto Rico as well as the places in which define their community. Along with the previous images of the island, I will be revisiting those parts that may appear different now compared to the photos from before the disasters. In light of Hurricanes Irma and Maria, I hope to revisit these places where the hurricane has hit and has changed the island and led certain places into further abandonment. For my research I will look to how Puerto Rico has changed from the everyday lives of those who still call it home and the place itself. What remains and what is no longer there anymore through visual documentation.

This will be a unique contribution because the effects of the hurricane are fairly new, and as someone who is Puerto Rican and has family that resides there, I will have both an outsider's and insider's point of view to the current state of the island as well as the people who still call this island home – despite the catastrophe. So many people have lost their homes, have no clean running water, have no supplies that are needed, medical help is dire and so much more. Is Puerto Rico being helped? How are the people who call this place their home surviving? Will Puerto Rico ever be the same? These are just some questions I hope to answer visually.

POSTER #134

How Twentieth Century Technological Advancements Changed Popular Music in America

Brian Raleigh (The Verrazano School)

Faculty Mentor: Professor Dominick Tancredi
Department of Performing & Creative Arts

A common misconception exists that popular music and the pop genre are the same and the two terms can be used interchangeably. Popular music encompasses a variety of genres, including pop, that appeal to a larger portion of the population, whereas the pop genre is one specific genre comprised of artists and bands that conform to the taste preferences of their audiences. The various genres that were considered popular music throughout each decade in the twentieth century exist because experimental artists created new sounds and aesthetic tones with their exposure to new technology. This paper analyzes three technological and developmental factors that have changed what was to be considered popular music throughout the twentieth century to the present day in the United States. The factors are the advent of radio, inventions and alterations in instruments like the electric guitar and the synthesizer, and other mediums used to listen to and market popular music. With the creation of digital marketing, these developments further inspired the music community extending a wave of influence into the twenty-first century. Over time, these factors have worked together to change what may be considered popular music while revising the blueprints for the sound of that music.

PHYSICAL THERAPY

CONFERENCE LOCATION:
WEST LOUNGE

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

POSTER #142

Hybrid Walking in Mice with Pyramidotomies

Fatu Amara (The Verrazano School)

Faculty Mentor: Professor Zaghloul Ahmed
Department of Physical Therapy

Damage to the corticospinal tracts (CSTs) is often a cause of motor impairment in prevalent acquired neurologic conditions. The CSTs are responsible for control of distal fine motor control used in reaching and precision gait (Lemon, 2008). One of the focus of rehabilitation is the recovery of functional ambulation, which includes the ability to step precisely. One paradigm that examines the ability to step precisely is the split-belt treadmill. When quadrupeds or humans walk on a treadmill, their stepping is opposite to the direction of the treadmill motion. This suggests stepping is driven by sensory input from the stance leg (Musienko, et al. 2012). In a hybrid condition, in which one belt moves forward and the other moves backward, decerebrate cats with spinal stimulation, healthy infants and adults (Choi & Bastian, 2007: Yang, Lamont & Pang , 2005) can walk with their legs moving in opposite directions. Focal stroke, cerebellar and hemispherectomy lesion studies (Morton & Bastain, 2006; Reisman, Wityk, Silver & Bastian, 2007; Choi, Vining, Reisman, Bastian, 2009) have revealed that spatial and temporal parameters of feedback control such as stride length and stance time or the ability to make quick reactive adjustments is not impaired and may likely be mediated by spinal circuits. However, feed forward control or the ability to store new motor programs for split belt walking is impaired patients with hemispherectomy and cerebellar damage.

Specifically, patient with cerebellar damage show deficits in spatial and timing parameters of aftereffects. Patients with hemispherectomies show timing deficits. These findings agree with studies on the intact cat, which show stimulation of the motor cortex but not the red nucleus during locomotion has the capacity to alter the timing of locomotor parameters (Bretzner & Drew, 2005; Rho, Lavoie & Drew 2006). To determine if mice can learn hybrid walking and if the CSTs are necessary for such walking, we will train mice for 2 hours per day for 10 days to walk on a custom- made motorized split exercise wheel. We will examine direction and number and of steps taken by each limb. Mice will be divided into head restrained, unrestrained, pyramidotomy and control groups.

POSTER #40

Biomarkers of Early-Stage Osteoarthritis in Subchondral Bone

Monica Fining (Macaulay Honors College)

Faculty Mentor: Professor Jean-Phillipe Berteau
Department of Physical Therapy

Osteoarthritis is a painful and costly disease that inhibits daily activities by affecting the tissue and structural properties of joints. It is commonly attributed to the general wear and tear of the articular cartilage over time, but it is multifaceted and affects the entire joint, including the subchondral bone that borders the cartilage. Because bone is a dynamic organ, it can respond to loading changes through bone remodeling: the process of secreting bone matrix and reabsorbing it plays a key role in the adaptation of bone to mechanical changes. The process requires vascularization and structurally, bone remodeling is marked by porosity. Bone remodeling and porosity can alter the mineralization and therefore, the stiffness of the subchondral bone. Because osteoarthritis is currently diagnosed only after painful symptoms arise, the goal of this project is to study the structural changes in the subchondral bone of mouse femurs due to early-stage osteoarthritis in order to identify the initial structural biomarkers of the disease. Osteoarthritis is induced in the knee of wild type mice with repeated mechanical loadings, and the femur is dissected. After the femurs are embedded in PMMA acrylic resin, Scanning Acoustic Microscopy of the surface of the bone can reveal the porosity and stiffness in the knee joint of post-traumatic osteoarthritic mice.

POSTER #127

Modulation of Handedness in CD-1 Mice by Transcranial Direct Current Stimulation

Alexis Gorin, Omar Elwany

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, animal 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.

POSTER #4

Histomorphometry: Assessing the Relationship between Compositional & Mechanical Properties in Mineralized Tissue

Brandon Lei (Macaulay Honors College)

Faculty Mentor: Professor Jean-Phillipe Berteau
Department of Physical Therapy

Bone is a multiscale material composed of tropocollagen molecules and mineral crystals derived from hydroxyapatite. This research will consist of the different aspects of osteoporosis, including analysis of the mechanical and compositional properties of osteoporotic mice fibulae.

Wild-type mice are induced with osteoporosis and are given experimental treatment to decrease its effects. The mechanical properties of the affected osteoporotic bone are then analyzed using a tensile test, and compositional properties using Raman spectroscopy. This quantitative analysis will show any significances and/or correlations between mechanical and compositional properties, along with any differences between the control group, osteoporotic group, and osteoporotic treatment group.

POSTER #30

Atomic Force Microscopy of Subchondral Bone during Osteoarthritis Pathological Process

Lisa Manitta (Macaulay Honors College)

Faculty Mentor: Professor Jean-Phillipe 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 in 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 Atomic Force Microscope will be used to examine the subchondral bone femur of mice that have been given osteoarthritis through loading experiments. Nanoindentation will be performed on the subchondral bone femur of mice to examine the Elastic Modulus, or hardness, of the bone. It is expected that the Elastic Modulus will increase in the presence of osteoarthritis.

POLITICAL SCIENCE AND GLOBAL AFFAIRS

CONFERENCE LOCATION:
WEST LOUNGE WALKWAY

POSTER #91

Staten Island's Drug Epidemic: How Far Will the Public Go for a Solution?

Anthony Astarita, Rebecca Del Vecchio

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

One of the most staggering issues that plagues Staten Island is the opioid epidemic. Ever since 2009, opioid related deaths have taken more lives per year than car accidents. While many resoundingly agree this is a problem, the necessary steps are not being taken to solve it. In this research, we attempt to establish the dichotomy between what the public wants for a solution and whether they would be motivated to solve it. In other words, we believe that there is a contrast between attitudes and behavior when it comes to exchanging individual privacy in return for the common good. How far are Staten Islanders willing to go to solve this issue? We expect that Staten Islanders will not give up their privacy for a policy that could help with the drug epidemic. Even though there is a consensus on the salience of the issue, people are resistant when it comes to participating in the solution because addiction is seen as a fault of the user.

POSTER #138

Chinese Feminism

Samantha Brandt (The Verrazano School)

Faculty Mentor: Professor Jane Marcus Delgado
Department of Political Science and Global Affairs

This research addresses how the feminist movement of China affects Chinese women today. In this study, I compare the Traditional role of Chinese woman to the role of a Modern Chinese woman. It examines the influence that the Communist Revolution had on the country, and how it caused changes in the role of women. The results show that there has been an impact on marriage rates that have led to the phenomena of "left-over women." This thesis address how feminism as well as "left-over women" have affected globalization; first through immigration and then a worldly view of China.

POSTER #3

Happy Anniversary? A Ten Year Review on the United Nations Human Rights Council

Lena Maria Cotter

Faculty Mentor: Professor Anat Niv-Solomon
Department of Political Science and Global Affairs

To address the increasingly complicated human rights violations more effectively, the United Nations replaced its Commission on Human Rights (UNCHR) with the Human Rights Council (UNHRC) in 2006. This paper addresses the question whether the Council has, regardless of significant reforms, become permanently paralyzed in fulfilling its main mission. The focus of this study is to examine Article 18 of the Universal Declaration of Human Rights (1948), Article 18 of the International Covenant on Civil and Political Rights (1966) as well as the Declaration on the Elimination of All Forms of Intolerance and of Discrimination Based on Religion or Belief (1981) and the enforcement thereof in China, Iran and Myanmar during a period of ten years (2006 to 2016). To determine the effectiveness of the Council in relation to the aforementioned components, three key areas will be analyzed: the UNHRC agenda, resolutions and decisions (Regular Sessions between June 2006 and

July 2016 and Special Sessions between July 2006 and October 2016), the UNHRC operations locally in each target country (2006 to 2016) and, finally, to establish resource allocation, the official UNHRC budget (fiscal years 2007-8 to 2016-17), including voluntary donations (2006 to 2016).

POSTER #84

National Parks in a Counter Terrorism Framework

Matthew Newman

Faculty Mentor: Professor Anat Niv-Solomon
Department of Political Science and Global Affairs

This paper is an analysis on the counterterrorism needs of national parks in Staten Island. The parks included are Fort Wadsworth, Miller Field and Great Kills. The objective of this paper is to first understand the threats and needs, and then attempt to make suggestions to improve the safety of these parks from terrorist attacks without restricting public access and enjoyment. The paper begins with an assessment of the parks' security needs, as well as a review of current protocols, strategies, and responsibilities of Park Police, Park Rangers and the visitors. Following this first assessment, the paper will try to suggest ways to improve counterterrorism preparedness in these parks. The paper will draw on relevant literature and original data collected with the different constituents identified above.

PSYCHOLOGY

CONFERENCE LOCATION:
BOTTOM CENTER

POSTER #133

Lead in Water and Academic Achievement in New York City Public Schools

Olawunmi Arowolo

Faculty Mentor: Professor Valkiria Duran-Narucki
Department of Psychology

The current study investigates the relationship between elevated levels of lead in water fixtures in New York City public schools and students' scores in standardized ELA and Mathematics tests. Children are particularly vulnerable to lead poisoning and its neurotoxicity is widely documented as detrimental to cognitive development and therefore learning and academic performance (Grandjean, & Landrigan, 2014; Strayhorn & Strayhorn, 2012, Patrick, 2006). Publicly available data from the New York City Department of Education is analyzed to understand the effects of lead, and possibly lead poisoning, in the academic achievement of K-8 grade students. From 750 schools those with elevated levels of lead (n=695) had a lower mean score in standardized math tests (M= 302.85, SD = 20.3) than those with no elevated leads of lead (n=55, M = 305.42, SD = 20.8). Schools with elevated levels of lead (n=689) also had a lower mean score in standardized ELA tests (M= 305.77, SD = 15.53) than those with no elevated leads of lead (n=54, M = 309.63, SD = 15.92). These differences were, however, not statistically significant and further analysis needs to be done in order to establish the role of lead in academic achievement as well as the participation of other variables such as attendance, SES and teacher quality.

Grandjean, P., & Landrigan, P. J. (2014). Neurobehavioural effects of developmental toxicity. The Lancet. Neurology, 13(3), 330–338. http://doi.org/10.1016/S1474-4422(13)70278-3

Patrick, L. (2006). Lead toxicity, a review of the literature. Part I: exposure, evaluation, and treatment. Alternative Medicine Review, 11(1), 2-22.

Strayhorn, J.C. & Strayhorn, J.M. (2012). Lead exposure and the 2010 achievement test scores of children in New York counties. Child & Adolescent Psychiatry & Mental Health, 6(1), 4-11. doi:10.1186/1753-2000-6-4

POSTER #1

Modeling Categorical Representations in Memory for Object Orientations

Danielle Aylmer (The Verrazano School), William Frickenstein

Faculty Mentor: Professor Timothy Ricker
Department of Psychology

Working memory is a system that maintains currently relevant information for use in ongoing thought. Mathematical models of working memory have become important tools for understanding how we store memory.

Influential work by Zhang and Luck (2008) proposes that we can understand memory as a mixture of (1) memory for the item that was presented and (2) guessing. Hardman et al. (2017) suggest that although Zhang and Luck include memory for the exact value of the memory item in their model (i.e. the shade of a color) they do not account for information being stored categorically (i.e. memory only that the item was 'red') in their model of working memory. Hardman et al. propose a model that accounts for not only continuous representation of the exact color presented but also any categorical representations maintained. Hardman et al. demonstrate superior model fit for their model over the Zhang and Luck approach when accounting for recall performance with color memory. Here we seek to generalize the Hardman et al. findings by testing whether their model also provides a superior fit over the Zhang and Luck model for recall of 1 – 5 memory items varying in orientation. At test participants must recall the orientation of each memory item they saw moments ago. We fit both the Zhang and Luck and Hardman et al. models to our data and examine which approach is a better fit.

POSTER #76

Comparing Media Literacy of Adolescents and College Students

Cody Barshaba

Faculty Mentor: Professor Patricia Brooks
Department of Psychology

In today's world, where concerns about fake news, misinformation, psychographic research, and the power of algorithms to disrupt democracy proliferate; students need support in navigating the digital environment. In a recent study, Powers and colleagues (2018) validated a general media literacy scale (Bier et al., 2011) and explored relationships between media literacy and social media use, media multitasking and academic achievement in middle-school students (N = 78; mean age 13 years, range 11-15 years).

Adolescents' media literacy scores correlated positively with self-reported grades and negatively with self-reported social media use and media multitasking. These results suggested that experience with social media use, in particular, may not promote media literacy skills. Additionally, youth may need targeted media literacy skill instruction to reduce their vulnerability to misinformation via digital media and enhance their critical evaluation of content found through these sources. Media literacy is also a critical set of skills for college students. Recent research shows that college students lack skills in fact-checking and are unable to judge the credibility of online information (Wineburg et al., 2016). The present study aims to validate the media literacy scale used in Powers et al. (2018) with college students and incorporate new measures that specifically target digital information literacy as opposed to other media such as advertisements.

POSTER #97

Studying Neonatal Brain Development in Correlation to Anxiety using the 5-HT1A-R Knockout Mouse Model

Andrew Bastauross

Faculty Mentor: Professor Probal Banerjee
Department of Psychology

Signaling of the neurotransmitter Serotonin (5-HT1A) through its receptor (5-HT1A-R) has been widely accepted in research due to its implication in adult anxiety disorders (Toth, 2003). Women are twice more likely to be diagnosed with mood disorders than men even in childhood, (Hayward & Sanborn, 2002) raising the possibility that sex difference is a factor for 5-HT1A-R signaling early on. In the dentate gyrus (DG) region of the hippocampus, neurogenesis is correlated with serotonin levels. Most studies were conducted on adult mice, little has been done to understand neurogenesis in neonatal mice and its effect on later life anxiety. We analyze neurogenesis in the DG in postnatal day 8 (P8) 5-HT1A-R knock-out (KO) and wild-type (WT) mice during peak neurogenesis. We looked at the synaptogenesis in the CA1 region. Electron micrograph showed KO females having more synapses per area and post-synaptic density lengths.

Developmental behaviors are being analyzed to see if neonatal KO and WT mice have aberrant sex specific behavioral development early on, as well as maternal interaction. On the open field test a sex dependent difference was discovered in which adult KO female mice spent less time in the combined inner-middle zones than WT female mice, indicative of less anxious exploratory behavior in KO establishing the adult sex difference. On the elevated plus maze, KO males displayed more anxious behavior by spending more time in the protected head dipping area, which also correlated negatively with time spent in the open arms. Initial cell count is showing a trend towards our hypothesis for WTF having significantly more cells than KOF. However, WTM have less cells than KOM. A sex trend is also observed between the WTF and both KOM and WTM. Further analysis will be used to show a connection between neonatal behavior, neurobiological phenotypes and adult behavior relative to WT mice.

POSTER #65

Arduino Based Manipulation of Naked Mole-Rat Burrow Environment

Gianna Cirrone (Macaulay Honors College)

Faculty Mentor: Professor Dan McCloskey
Department of Psychology

Naked mole-rats tolerate low oxygen and high carbon dioxide at levels that can be toxic to other mammals. As a highly social animal that lives in large groups below ground, naked mole-rats are likely to experience the highest levels of CO2 in nesting areas. In this study, we measured CO2 levels in different areas of captive naked mole-rats at CSI. We found that the nesting cages do indeed have high levels of CO2 sometimes more than 60 times greater than Earth's atmosphere. Despite these conditions that would be toxic to humans, naked mole-rats spend most of every hour in the nest area. The current study was designed to determine whether naked mole-rats would prefer high CO2 environments to low CO2 environments. To test this, we developed an Arduino based microcontroller to regulate levels of CO2 in different parts of the captive naked mole-rat environment. This microcontroller is interfaced with a Vernier gas sensor and flow control valve. Movement through the colony is measured using Radio Frequency Identification transponders implanted under the skin of each colony member. Preliminary data showed that high levels of CO2 increase visits to non-nest parts of the environment. Adding the Arduino-based system will allow for finer control of the environment. This will allow us to determine whether naked mole-rats are actually attracted to conditions which are noxious to most mammals.

POSTER #6

Memory Load and Probabilistic Reward

Nicholas Cirrone (Macaulay Honors College), Priscilla Hutchinson

Faculty Mentor: Professor Timothy Ricker
Department of Psychology

Decision making is important in our everyday lives. Whether choosing the best schools, jobs, types of investments, or day-to-day interactions, most of what we do requires making choices that lead to differing outcomes. Often, we utilize our working memory while we deliberate between options. Our working memory allows us to store new information for a brief period to perform cognitive tasks. We examine the effect that loading a person's working memory with irrelevant information has on decision-making skills. Previous research has shown that people become more impulsive with frontal lobe lesions (Berlin, Rolls, & Kischka, 2004) and that pathological gambling (Dixon, Marley, & Jacobs, 2003) or drug addiction (Kirby & Petry, 2004) leads to more impulsive behavior compared to those without these disorders.

Green and Myers (2004) found that people with unimpaired decision-making skills tend to choose rewards that are more certain as opposed to rewards with a variable chance of receipt, despite the probabilistic reward being larger in expected value. In our experiment, we gave participants a memory load of 0-3 memory items to remember before performing a decision-making task. The decision-making task involved deciding between a smaller certain reward or a larger reward that had a displayed chance of not being received at all. Results showed that there is a difference in the proportion of probabilistic rewards chosen as the memory load increases. This indicates that when working memory is impaired, decisions tend to go in favor of a larger uncertain reward possibly indicating more impulsivity.

POSTER #89

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). These biases may be held subconsciously within individuals, otherwise known as implicit biases towards different outgroups, or may be biases that are explicit, or consciously aware of. Research about biases towards people with disabilities has generally focused on explicit stigma (Stier & Hinshaw, 2007). However, implicit stigma may affect 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 381 undergraduate students (Males=117 ; Females=264). We used two IATs to test for implicit biases, the first assessed stigma against ASD and CD. The second measured the function of race as an identifier of either ASD or CD.

After the IAT tasks, 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 reading the vignette, participants were presented with a Social Distance Scale (Gillespie-Lynch et al., 2015) to examine how willing the individual was to be associated with the child at varied levels of intimacy. Data analysis is ongoing. Therefore, findings described in this abstract focus on explicit stigma towards ASD and CD. A within-subjects test with stigma towards ASD vs CD as the within-subjects variable, gender as the between-subjects variable, and racism as a covariate revealed that stigma towards CD was higher than stigma towards ASD ($F(1, 378)=64.85$, $p<0.001$). Racism ($p=0.31$) and gender of participants ($p=0.14$) were unrelated to stigma. Higher stigma towards CD can prevent treatment for the child or individual and make teachers and educators less inclined to help these children.

POSTER #82

Examining Shifts in Attention to Eyes and Mouth in the Preschool Years

Natalia Fraczek

Faculty Mentor: Professor Jennifer Wagner
Department of Psychology

Faces convey a considerable amount of information and play an essential role in an individual's social interactions. From birth, infants not only demonstrate a great interest in faces, but display the ability to recognize faces (Bushnell et al., 1989). Several studies have looked at infant visual attention to faces during development. Work by Lewkowicz et al. (2012) found that when infants are looking at videos of faces ('dynamic' faces), at 4 months they show a preference for the eyes of the speaker's face, but by 12 months, an attentional shift to the mouth occurs, with a preference for the mouth over the eyes. Lewkowicz et al. (2012) posited that this reflects that infants in this age range are learning how to produce syllables and developing their language skills. Other studies have looked at infant attention to still pictures of faces ('static' faces) and have also found shifts in patterns of attention to eyes and mouth. In Wagner et al. (2013), infants showed an overall preference for eyes when viewing static faces, but between 6 and 12 months of age, attention to the mouth was found to increase.

The present study will extend this work to investigate how attention to the eyes and mouth might continue to shift in preschool-aged children. Since children at this age are still in the process of mastering both receptive language (speech comprehension) and expressive language (speech production), it is important to examine whether they might show continued increases in gaze patterns focused on the mouth as they continue to advance in learning language. In this study, static images of female faces varying in emotional expression were presented to 2- to 5-year-old children, and an eye-tracker was used to record the location of children's gaze. Looking time will be calculated for eyes and mouth, and analyses will examine patterns of visual attention to these regions of the face over this period of development. By examining shifts in patterns of visual attention to faces in preschoolers, this work can expand our understanding of how learning a language might continue to influence patterns of attention to eyes and mouth beyond what is known from past infant work.

POSTER #61

Individual Differences in the Quality of Night Sleep Influence Infants' Preparedness for Learning the Following Day

Dana Friedman (Macaulay Honors College)

Faculty Mentor: Professor Sara Berger
Department of Psychology

"Sufficient and efficient" sleep is crucial for optimal functioning (Gruber et al., 2014, p.1517). The more efficient infants' sleep, the higher their scores on parent reports of problem-solving abilities or on a standardized cognitive assessment (Gibson et al., 2012; Scher, 2005). However, to date, no studies have examined the relation between quality of night sleep and infants' preparedness for learning the next day. The current study assessed the link between individual differences in night sleep and infants' ability to solve a novel locomotor problem. New walkers (n=23) who were within a week of having given up crawling participated. The night before the task infants wore an actigraph, a wristwatch-like activity monitor, which provides noninvasive measures of sleep. The following sleep parameters were investigated: number of wake episodes, total minutes scored as sleep, and sleep efficiency or, sleep minutes divided by the total sleep interval (Scher et al., 1998). The next morning, an experimenter taught infants to solve a task of crawling through a nylon tunnel. All infants started upright on two feet at the opening of the tunnel and were encouraged to reach a caregiver at the other end. Training consisted of a 15-step protocol that includes 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 to demonstrate the path. The session ended once infants successfully crawled through the tunnel or reached 15 prompts (whichever came first.) Coders documented how many steps in the training protocol infants needed, how many exploratory postural shifts infants made before entering the tunnel and latency.

Results showed that the more wake episodes infants had, the more postural shifts they engaged in and the longer they took to enter the tunnel. Infants with insufficient sleep were more fatigued and not as prepared to learn the following morning. Night wakings may have been due to the period of locomotor change they were in or perhaps due to a still developing regulatory system. Future work should examine the cause of night wakings and the effects of prior tunnel experience on infants' ability to solve the tunnel task.

POSTER #41

Masking and the Speed of Consolidation into Visual Working

Tiffany Galbo, Hadeel Ayesh

Faculty Mentor: Professor Timothy Ricker
Department of Psychology

Working memory is a cognitive system with a limited capacity responsible for temporarily holding information available for processing. We seek to understand the relationship between masking and working memory consolidation. Consolidation is the stabilization of fragile sensory traces into durable working memory traces by directing attention toward the internal representation of a just-presented stimulus. Masking is the disruption of a sensory trace by perception of another stimulus in the same location. We test two theories of the relationship between masking and consolidation into visual working memory. The first theory, the attentional blink, states that masking slows the rate of consolidation, reducing performance because fewer items are able to enter into memory before they are forgotten. The second theory, working memory encoding, states that masking should end the encoding process, preventing further working memory trace creation while leaving the consolidation process itself unaffected. To test these theories, we manipulate the amount of consolidation time after each memory item presentation and determine whether a mask is present. The attentional blink hypothesis predicts that we should observe an effect of mask presence and time for consolidation, as well as an interaction between these two factors. The working memory encoding hypothesis also predicts that we should observe an effect of mask presence and consolidation time, but no interaction between these factors. Our results indicate evidence for an interaction between mask presence and consolidation duration are in agreement with the attentional blink hypothesis.

POSTER #39

Semantic Relatedness of Word Associations in School-Age Children and Adults

Fabienne Geara (The Verrazano School), Alexandria Garzone, Fiza Akram

Faculty Mentor: Professor Patricia Brooks
Department of Psychology

Theories of lexical-semantic development assume that speakers build networks of associations that link together words in their vocabularies (Hills et al., 2009; Steyvers & Tenenbaum, 2005). How such networks of association develop is not well understood. The current study used a repeated word-association task to compare the strength of word associations of school-aged children and adults with the goal of informing theories of lexical-semantic development, while extending findings on semantic development beyond the early years (e.g., Beckage et al. 2011; Che & Koeske, 1983). Children (age range 7-11) and adults (range 18-30) were asked to generate the first word that came to mind in response to a list of cue words (24 nouns and 24 verbs) repeated three times. To estimate semantic relatedness, we used objective measures based on a large corpora of the English language, comparing the responses of children and adults to the cues as a function of part of speech (nouns, verbs) and list repetition. Two online databases provided numerical estimates of the strength of the relationship of responses to cues: 1) Latent Semantic Analysis (LSA, Landauer & Dumais, 1997; http://lsa.colorado.edu/), which uses distributions of words in a large corpora (co-occurrence statistics) to estimate relatedness, and 2) Continuous Bag of Words (CBOW, Mandera et al., 2017; http://meshugga.ugent.be/snaut-english/), which uses vector representations to estimate semantic distance. Based on a prior repeated word-associations study that used subjective estimates of semantic relatedness to categorize children's responses (Sheng & McGregor, 2010), we expected participants to generate initial responses that were closely related to the cue words and produce more unrelated responses over time. Both children and adults followed the predicted pattern, with semantic

relatedness decreasing over list repetitions. Relatedness estimates were significantly higher for verbs than for nouns, which may have been due to the increased tendency to produce thematic associates for verbs and taxonomic associates for nouns (Mirman et al., 2017). Estimates using CBOW were more sensitive to age than LSA and suggested that children's responses were less closely related to the cue words than adult responses.

POSTER #93

Cardiac Autonomic Nervous System Responses in Relation to Emotional Intelligence

Mohammad Mustafa Hashimi

Faculty Mentor: Professor Jennifer Wagner
Department of Psychology

Emotional intelligence is defined as how people identify, understand and respond to others within social circumstances (Salovey & Mayer, 1989). Recently, society has observed notable increases in impairments relating to emotional intelligence, particularly in individuals with autism spectrum disorder (ASD). The autonomic nervous system (ANS) is thought to play a key role in emotional functioning and can provide an unfiltered look at hidden emotional responses that are occurring with or without conscious awareness (Boucsein et al., 2012). Several studies have found that heart rate (HR) responses can reflect emotional reactions. For example, work by Bradley et al. (2008) observed significantly greater decreases in HR while adults looked at negative images (e.g., an aggressive barking dog) as compared with positive or neutral images. Researchers have also identified heart rate variability (HRV), defined as the amount of variation in the timing between heartbeats, as an ANS measure that relates to social and emotional functioning (Porges, 2007). In adult studies, higher HRV has been found to relate to more motivation for social engagement Kemp et al., 2012) and better social acumen (Quintana, 2013). Other work has examined HRV in children with ASD and found that higher HRV is associated with superior emotion recognition skills (Bal et al., 2009).

The present study extends previous research to look at HR changes during emotional-picture viewing and levels of HRV alongside self-report measures of social and emotional abilities in a group of neurotypical adults. Subjects were presented with 60 semi-randomized images comprised of negative, positive and neutral stimuli, while HR was recorded. Following this task, participants filled out a series of questionnaires to assess social and emotional processing. We hypothesize that, as in past work (e.g., Bradley et al., 2008), greater HR responses will be found to negatively-valenced stimuli. Additionally, we also hypothesize that both the level of this HR change to negative images as well as our measure of HRV will be related to better socio-emotional perception. This work will help further our understanding of relations between physiological responses and social and emotional abilities.

POSTER #130

Using Technology to Assess and Improve Emotion Recognition Deficit in Autism

Kiran Imtiaz, Alyssa Carpentieri, Nada Mohamed

Faculty Mentor: Professor Bertram Ploog
Department of Psychology

The proposed experiment will use a behavior-analytical approach to evaluate emotion recognition in children with autism using an iPad as a mobile-game device. Many studies have been conducted on emotion recognition in autism, but inconsistent findings have been reported. Reasons for inconsistencies could be differences in the type of stimuli, the intensity of the stimuli used, the type of task used to assess emotion recognition, varying sample sizes and different functioning level of the

participants as well as different chronological ages or the types of emotions assessed. The purpose of the present study is to asses any emotion recognition deficits in individuals with autism when compared to typically developing individuals, to identify reasons for previous inconsistencies, and to provide remediation if such a deficit will be found. This will allow us to test for converging evidence of behavior analytic and eye-tracking approaches. The behavior-analytic approach has at least one advantage over eye-tracking approaches because it allows us to assess whether the participant actually paid attention to the stimulus or merely looked at it. Specifically, a matching-to-sample paradigm will be used with a variety of stimulus types such as photos of human expressions, cartoon drawings, emoji faces, and geometric shapes.

POSTER #74

Expression of Carbonic Anhydrase in the Hippocampal Region of the Naked Mole Rat

Mafanta, Kajakhe

Faculty Mentor: Professor Dan McCloskey
Department of Psychology

The African naked mole-rat has been shown to age differently than most other mammals. In addition to its very long life (over 30 years) there is evidence that the brain matures very slowly during development. It is proposed that this slow development allows naked mole-rats to better tolerate the high levels of carbon dioxide they are exposed to in the colony nest. We examined two important regulators of carbon dioxide in the brain: two isoforms of carbonic anhydrase. Carbonic anhydrases serve the important function of regulating pH, and are related to the decrease in carbon dioxide tolerance in most mammals shortly after birth. We examined Carbonic Anhydrase XIV (CA14), which is typically found extracellularly in the brain, and Carbonic Anhydrase VII (CA7), which is found inside neurons. Using immunocytochemistry, we observed a high level of expression of the extracellular isoform (CA14), but low levels of expression of the intracellular isoform (CA7). This expression is consistent with the much stronger response of neurons to the inhibition of extracellular CA than intracellular CA that we observed with electrophysiological recording.This may indicate a relative impairment in intracellular buffering of high carbon dioxide, and may relate to the high tolerance of carbon dioxide in this species.

POSTER #80

Direct Exposure to the Suicide Attempt of a Loved One or Family Member in Assessing Lifetime Suicide Ideation

Damilola Kolade

Faculty Mentor: Professor Ellenge Denton
Department of Psychology

Literature on exposure to a suicide attempt reports a positive association between direct exposure and suicide ideation. Direct exposure can be defined as knowing or having the awareness of a suicide attempt or completion in a social network, specifically family and friends, which puts an exposed individual at increased risk for suicide ideation. In contrast, individuals who do not have an awareness of a suicide attempt in their social network do not show an increase in suicidal thoughts. In this present study, we examine how direct exposure to the suicide attempt of a loved one or family member is associated with lifetime suicide ideation in the youth's "decreased desire to live" (Klonksky and May, 2015).

Using data from the Guyana Suicide Project, which consists of self-report responses to youth traumatic events among 50 Guyanese youths, ages 8-18, we measure direct exposure to suicide from

youth response to the Traumatic Events Screening Inventory item: "Has someone close to you ever tried to kill or hurt himself/herself really badly on purpose (like stabbing, cutting, or burning himself/herself, or taking too many pills or drugs [an overdose])? In the demographic questionnaire, we also ask whether the youth has "a friend or family member who attempted to take his/her life?" as another measure of youth exposure to suicide attempt. To measure lifetime suicide ideation, youth were asked "Have you EVER tried to kill yourself?" using the DSM-5 Self-Rated Cross-Cutting Measure. In the analysis of the data for this study, we expect to find that Guyanese youth who answered "Yes" to the suicide exposure measures will also report lifetime suicide ideation compared to those who do not have an awareness of a suicide attempt of a friend or family member. The current research contributes to learning how exposure to suicide influences an individual's own propensity for suicide ideation.

POSTER #90

Examining Associations between Theory of Mind and the Broader Autism Phenotype

Vincent Lee

Faculty Mentor: Professor Kristen Gillespie-Lynch
Department of Psychology

Autism Spectrum Disorder (ASD) is partially defined by impairments in social communication. These difficulties also extend into the general population. Autistic traits in the general population are known as the Broader Autism phenotype (BAP). We investigated possible associations between the BAP and Theory of Mind (ToM), which is posited to be impaired in ASD. Participants (N=369; Female=220 completed an online survey including self-report measures of ToM (cognitive empathy), affective empathy and the BAP (Autism Quotient (AQ)). Higher AQ scores were correlated with lower ToM $r(367)=-.33$; $p<.001$ but AQ scores were not significantly related to affective empathy $p=.06$. This finding shows that higher BAP scores are associated with more difficulties understanding other minds but not with reduced feeling for other people.

In order to gain a deeper understanding of ToM difficulties associated with the BAP and autism, we are conducting an ongoing follow-up study in person. Participants with and without autism are completing measures of the BAP (the AQ and the BAPQ) and two ToM tasks, the Reading the Mind in the Eyes Task (RMET), measuring the ability to identify emotional states from pictures, and the Awareness of Social Inference Test (TASIT), assessing subtler aspects of ToM (e.g. recognizing lies and sarcasm) through brief audiovisual clips. We will compare performance on the aforementioned standardized measures of ToM to the ability to demonstrate ToM during a game-based interaction by adapting the information one provides to one's partner based on what the partner already knows. We expect that associations between the BAP and ToM will be strongest for the most interactive ToM task as ToM difficulties associated with autism in adulthood are often subtle.

POSTER #83

Visual Attention and Pupil Responses to Emotional Faces in Children and Relations to Temperament

Aviva Lehrfield (Macaulay Honors College)

Faculty Mentor: Professor Jennifer Wagner
Department of Psychology

Children learn to scan faces for signals about emotional states, which convey meaningful information about the environment. Studies show that even infants as young as 8 months quickly detect threat-relevant faces (i.e., angry and fearful), indicating a visual system that evolved to quickly detect danger

signals (LoBue, 2010). While scan patterns indicate visual attention, the pupil has been used to indicate emotional processing: research suggests that when viewing emotionally-salient images, pupil dilation is controlled by the sympathetic nervous system, the branch of the autonomic nervous system that mediates the "fight or flight" responses that prepare our bodies for danger (Andreassi, 2006).

The present study used eye-tracking to record children's visual attention to emotional faces alongside their sympathetic response, as indicated by changes in their pupil size. In addition to examining attentional and physiological responses to threat-relevant faces, this study also analyzed children's temperamental trait of fearfulness to examine how it relates to these eye-tracking measures. Children between the ages of 2 and 5 years were presented with two tasks involving emotional faces (happy, sad, fearful, angry and neutral). Faces were presented alone ('Single Emotion' task) or in an array with three neutral faces ('Emotion Popout' task). An eye-tracker recorded gaze and pupil size during these tasks, as well as during a non-social baseline movie with colored shapes. Parents then filled out questionnaires assessing their child's temperament, which were later used to calculate the child's mean score on the fear subscale. For each emotion in the Single Emotion task, looking duration, proportion of time spent on eyes, and pupil size were calculated. For the Emotion Popout task, the proportion of time spent on each emotion was calculated. Correlational analyses will be conducted to examine associations between visual attention across tasks and between visual attention and pupil responses to different emotions. Further analyses will examine how temperamental fear relates to these measures. This work will help us better understand how children scan and physiologically react to emotional faces, as well as how this relates to their temperament.

POSTER #72

All in a Day: Everyday Experiences of 12-Month-Olds in Two Cultures

Tirza Lehrfield, Wai Sum Alzina Fok (Macaulay Honors College)

Faculty Mentor: Professor Lana Karasik
Department of Psychology

The role of culture and context has largely been ignored in motor development. However, commonplace childrearing practices, which shape infants' daily experiences, offer varying opportunities for practicing locomotion. To examine effects of childrearing on opportunities for movement, we compared 12-month-olds in Tajikistan, where infants use a restrictive "gahvora" cradle, to 12-month-olds in the U.S. who use other baby gear that limits movement. Using a time-diary, mothers reported their 12-month-old infants' daily opportunities for movement as well as restriction in the gahvora and other furniture during the previous 24-hour day. Using observations and parent reports, infants' motor development was measured. We found that all Tajik infants spent long stretches of time in the gahvora during the 24-hour day. When not in the gahvora, 12-month-olds were mostly unrestricted. Although not in a gahvora, U.S. infants spent comparable amount of time restricted in cribs, bounces, highchairs, and strollers. In ongoing analyses, we are examining the relation between restricted time and infants' locomotor ability. Tajik and U.S. infants' experience similar time restricted, but vary on the form of restriction. Equipment restricts infants in space, but gahvoras additionally restrict infants' posture and limb movements. Findings shed light on similarities and differences in childrearing practices in infancy and how they may support or hinder opportunities for locomotion.

POSTER #46

Exploring Relationship between Statistical Learning Tasks

Arshia Lodhi (The Verrazono School), Batool F. Shirazi, Paloma T. Zacarias, Elizabeth S. Che

Faculty Mentor: Professor Patricia Brooks
Department of Psychology

Statistical learning (SL) of co-occurring patterns or sequences in the environment is thought to underlie learning of complex systems of knowledge such as human language. SL is commonly assessed via learning of repetitive patterning of visual-spatial elements that lead participants to predict the next element in the sequence, as in the Serial Reaction Time task (SRT: Lum & Kidd, 2012; Nissen & Bullemer, 1987) and the Altering Serial Reaction Time task (ASRT: Nemeth et al., 2010; Howard & Howard, 1997). In the SRT task, the sequences-to-be-learned involve adjacent elements whereas in the ASRT task the predictable sequences involve non-adjacent elements due to the insertion of random elements in the pattern. A prior study found no correlation in task performance between the SRT and ASRT tasks ($r = -.18$), which suggests that SL of adjacent vs. non-adjacent dependencies relies on distinct learning mechanisms (Parshina, Obeid, Che, Ricker, & Brooks, 2018).

Furthermore, in this study, 95.9% of participants showed sequence-specific learning of adjacent dependencies in the SRT task, but only 64.9% of participants showed sequence-specific learning of non-adjacent dependencies in the ASRT task. SL in the ASRT task, but not the SRT task, correlated with nonverbal intelligence, visual-spatial working memory, and sentence comprehension. These findings linking ASRT task performance with nonverbal intelligence and working memory contradict claims that performance on the ASRT task relies on implicit learning, rather than explicit problem solving.

The current study aims to further understanding of SL by replicating the main findings of Parshina et al. (2018) with a new set of outcome measures (i.e., different measures of nonverbal intelligence, sentence processing, and working memory). In addition to the SRT and ASRT tasks, we administered two standardized tests: TONI-3 (Test of Nonverbal Intelligence) and the TROG-2 (Test for Reception of Grammar), the one-shape array task (Cowan et al., 2011) to assess visual-spatial working memory and the grooved pegboard task to assess manual dexterity and fine-motor control. Our goal in conducting the study is to shed light on putative SL mechanisms underlying language learning and processing.

POSTER #2

Cognitive Load Effects in Visual Working Memory Recall

Gregory Major, Hamza Tariq

Faculty Mentor: Professor Timothy Ricker
Department of Psychology

We examine the role of attention in maintaining information in our working memory system. We investigate whether the proportion of time you are distracted by a distracter task during memory retention, called the cognitive load, has an impact on your memory. A higher cognitive load leads to lower memory performance in a broad range of memory tasks. However, some past work suggests that cognitive load may not influence memory performance for continuous low-level features, such as fine-grained orientation, implying that attention cannot be used to maintain non-categorical information in working memory (Ricker & Cowan, 2010; Vergauwe et al., 2014).

We have recently demonstrated this lack of a cognitive load effect using continuous angle information in previous experiments. Here we use the same stimuli that previously did not show a cognitive load effect and demonstrate that these stimuli do produce the effect when presented in a categorical manner.

POSTER #129

How does Socio-Demographic Risk Contribute to the Delayed Development of Social Communication Skills in High-Medical-Risk Infants and Toddlers?

Joan Mbamaonyeukwu (The Verrazano School)

Faculty Mentor: Professor Asanbe Comfort
Department of Psychology

The literature indicates that children living in neighborhoods with high poverty level/low socio-economic status (SES) are at increased risk for delays in cognitive and language development, compared to children from low poverty level/ high SES neighborhoods. This implies that the neighborhood that a family lives in can be an indicator of various socio-demographic risk factors such as: low-income level, food insecurity, housing insecurity, limited access to quality health care and other resources, and other forms of environmental disadvantage. The current study is designed to examine how the neighborhood a child lives in influences the development of social communication skills in preterm high-medical-risk infants and toddlers. We hypothesized that infants living in the North Shore neighborhoods of Staten Island, which have a higher percentage of families living in poverty, are more likely to have delayed social communication skills than infants living in the South Shore neighborhoods. We utilized archival data collected by researchers at the IBR on 361 participants from the two neighborhoods. The Communication and Symbolic Behavior Scales Infant-Toddler Checklist (CSBS-ITC) was completed; scoring below the 10th percentile on the CSBS-ITC checklist is an indicator of delayed social communication development. As predicted, CSBS-ITC scores indicated that more infants and toddlers from the North Shore were experiencing social communication delays, compared to their peers from the South Shore neighborhood. This provides support for our hypothesis that living below poverty level is one of the many factors that contributes to delayed social communication skills. The implication from this finding is that referrals for early intervention services may be especially important for preterm infants living in neighborhoods with increased socio-demographic risk factors.

POSTER #44

An Examination of Attitudes towards Prescriptive Authority across Prescribing Professionals

Kristen Parente, Fernanda Moura

Faculty Mentor: Professor Daniel Kaplin
Department of Psychology

To date, five States have passed laws allowing appropriately trained psychologists the right to prescribe psychotropic medication. Yet the prescriptive authority (RxP) movement remains controversial within the medical community. In this study, we examine whether support for prescriptive authority is impacted by professional identity, information about the RxP movement, and geographic location. Using online resources, 84 participants completed an online version of Kaplin and colleagues (2016) 15-item survey instrument. Using independent samples t tests, we found that psychologists expressed significantly more support for the benefits, $t(80) = -3.966$, $p < .001$, and less concern regarding the drawbacks of prescriptive authority, $t(80) = -2.75$, $p = .007$. We found non-significant differences in support between those receiving ($M = 56.84$; $SD = 12.24$) and those not receiving ($M = 59.49$; $SD = 10.82$) a fact sheet, $t(83) = -1.028$, $p = .307$. Lastly, participants from rural ($M = 58.00$; $SD = 12.29$), urban ($M = 59.69$; $SD = 10.82$), and suburban communities ($M = 57.32$; $SD = 11.07$) did not differ significantly in support for prescriptive authority, $F(2, 81) = .317$, $p = .730$. Since this is a preliminary analysis of an ongoing research study, we believe that further research should include a larger sample size for all conditions. Furthermore, greater efforts to include medical doctors and physician assistants should be considered.

POSTER #62

Infants' Ability to Consolidate New Information Depends on the Timing of a Nap Relative to Learning and Test

Saad Pascale

Faculty Mentor: Professor Sarah Berger
Department of Psychology

Napping between training and test improves infants' declarative memory for novel actions (Konrad et al., 2016), their ability to generalize artificial language rules (Gomez et al., 2006) and their efficiency at motor problem solving (Berger et al., 2017). These studies focus on the relationship between learning and sleep, but how sleep benefits learning is still unclear. The goal of this project was to test whether the timing of naps relative to learning mattered. Infants (n=10) were taught to navigate a nylon tunnel which required them to switch to crawling, a challenging task for new walkers. Experimenters followed a training protocol controlling for how to demonstrate task-relevant prompts as infants learned the task. The task ended once infants went through the tunnel or were exposed to the maximum number (15) of training steps. In the Learning-Sleep-Interference (LSI) condition, infants (n=6) received training immediately before their nap, while in the Learning-Interference-Sleep (LIS) condition (n=4), they received training 3.5 hours before their nap. The total delay between training and test was about 6 hours. Coders documented: the number of training steps, the frequency of postural shifts, exploratory behaviors, and if the infant failed to maintain posture to fit in the tunnel causing a mismatch.

Infants with previous tunnel experience did well during the pretest session across conditions with little room for improvement. Therefore, difference scores and proportions for training steps, duration, and shifts between training and test were calculated for each infant. Infants in LSI, without tunnel experience, showed improvement from pre-test to post-test proportional from where they started. They were efficient in solving the task because they explored less and made fewer mismatches in posttest. Infants in LIS, with tunnel experience, had longer durations from pre-test to post-test and received more prompts in post-test. Improved motor problem solving from training to test provides further evidence for the benefits of sleep on learning. The addition of a nap directly following training caused the greatest improvement. This supports the idea that while sleep in general is beneficial, the timing of sleep is especially crucial, particularly for infants.

POSTER #64

Differential Expression of Insulin and GLUT4 in Dispersers of the African Naked Mole-Rat Species

Corey Plate

Faculty Mentor: Professor Dan McCloskey
Department of Psychology

African naked mole-rats appear to undergo an important metabolic switch when they are preparing to disperse from their natal colony. This switch requires that naked mole-rats shift from a tolerance, and perhaps even a preference, for high carbon dioxide in the nest, to a preference to go above ground into Earth's normoxic atmosphere. This project tests the hypothesis that this switch is companied by differences in the way glucose is utilized in the blood. To test this, GLUT4 and insulin are examined in naked mole-rats as they prepare to disperse. Disperser naked mole-rats are detected by monitoring Radio Frequency Identification following an audio-recorded colony-wide alarm call coming from the colony nest. Our observations suggest that these alarm calls result in the colony queen exiling specific animals from the colony nest, likely to trigger the required metabolic switch necessary to transition from a preference for a hypercapnic environment, to a tolerance for a normoxic one. In the present

study, blood insulin and brain GLUT4 expression are measured in captured dispersers and non-dispersing colony mates using ELISA. The naked mole-rat GLUT4 amino acid sequence is significantly different from that of rat and mouse GLUT4, possibly related to the consistently low insulin observed in this species.

Diminished GLUT4 activity in this species may be presenting a diabetes-like condition in NMR, which could relate to their lack of hair, slow heart rate, fitness in hypoxic conditions, cancer resistance, longevity, and sparse number of neurons found in their CNS. We propose that exile drives insulin upregulation and increased fatty-acid storage which lower the tolerance to the hypoxic conditions of the colony nest, and improve fitness for the normoxic ones of surface atmosphere. The ratio of GLUT4 to other glucose transporters may be important in this developmental switch.

POSTER #17

Precueing and the Attentional Blink in Working Memory

Iryna Pylypchuk

Faculty Mentor: Professor Timothy Ricker
Department of Psychology

Working memory is responsible for storing and manipulating information for a brief period of time to carry out general cognitive tasks. Short-term consolidation is the process through which sensory information is transformed into a stable working memory trace. Short-term consolidation requires attention and creates an attentional blink, a brief period of time in which attention cannot be shifted to a new item. The present work examines whether the attentional blink can be reduced during working memory tasks with serial presentation of memory items by precueing the location of the next memory item in the sequence. Ricker and Hardman (2017) argue that attentional blink cannot be interrupted during working memory tasks. In contrast Nieuwenstein et al. (2005) show that the attentional blink can in fact be reduced using bottom-up attention cue within a rapid identification task quite different from traditional working memory paradigms. In our current study participants (n=49) were presented with a series of memory items while the amount of time for consolidation (100ms or 1000ms) and the presentation of precuing (absent or present) was manipulated. We predict, that if attentional blink caused by short-term consolidation cannot be interrupted then precuing will have no effect on attentional blink. Although, if precuing can interrupt the attentional blink then precuing the next item will reduce the attentional blink of the previous item. Our results are discussed in terms of previous mentioned theories.

POSTER #87

Understanding the Development of VTA Circuitry

Jenifer Sacaccio

Faculty Mentor: Professor Leora Yetnikoff
Department of Psychology

Adolescents (~age 12–19 in humans) are a uniquely vulnerable population because they engage in impulsive behaviors that can have long-lasting behavioral consequences. This proneness to impulsivity is thought to result from the ongoing adolescent maturation of neural circuits that subserve motivation and decision-making. One neural circuit known to have ongoing maturation throughout adolescence is the mesocorticolimbic dopamine system.Dopamine neurons that contribute to this circuit reside in the ventral tegmental area (VTA) and send projections to cortical and limbic target regions. While there is some understanding of the development of connections in dopamine target regions, little is known about the development of VTA circuitry.

The goal of this study was to examine if differences exist in VTA circuitry between adolescent and adult mice. It has previously been reported that numbers of neurons in the rodent brain continue to increase throughout adolescence followed by a decline in these numbers in adulthood (Morterá, & Herculano-Houzel, 2012). As such, it was hypothesized that the adolescent VTA has greater numbers of dopamine neurons than the adult VTA. To achieve my stated aim, my study used the Isotropic Fractionator technique to examine dopamine cell bodies in the VTA of adolescent (~age P21) and adult (~age P60) mice. Preliminary analysis indicates no age difference in the number of VTA dopamine cell bodies in the VTA. However, data analysis is still underway and this preliminary result may change. It is also plausible that methodological issues may obfuscate any age difference in VTA circuitry. For example, the VTA is a very small region of interest that upon dissection gave rise to a minute amount of brain tissue that was difficult to homogenize effectively for accurate measurement using the Isotropic Fractionator technique. Additional analysis will clarify the methodological concerns. The results of this study contribute to our understanding of the development of local VTA circuitry of the mesocorticolimbic system. Understanding the organization of the mesocorticolimbic dopamine system in the adolescent brain can in turn further understanding of how environmental events alter the circuitry to induce psychopathology, such as drug addiction.

POSTER #23

The Implications of Language on the Field of Psychology

Michael Scorie (The Verrazano School)

Faculty Mentor: Professor Louis Rotondo
Department of Psychology

Description: The purpose of my study is to explore the impact that language has on the field of psychology. To accomplish this, I completed a historical review on the origins of the field of psycholinguistics and the antecedent thought and work that contributed to it. Following this, I analyzed published research on various components of psycholinguistics, including wording effect, context effect, framing effect, priming, social desirability responses, and the complications these can lead to in research.

Thesis: My thesis is that words, the order of those words in a sentence, and the context that those words may fall into are all capable of having an effect on emotion and human performance on certain tasks in various ways.

Results: The historical review that I completed and the results of the psychological research that I analyzed should illustrate the vital link between language and psychology. From the way that a sentence is worded to the context that said sentence is present in, language and the way humans use that language is instrumental to our understanding of our own emotions as well as the world around us.

POSTER #136

Psychology of Littering

Marwa Shueib

Faculty Mentor: Professor Bertram Ploog
Department of Psychology

Despite evidence of the negative impacts onto the environment, littering remains to be an issue and requires continuous research. The CSI project on the psychology of littering attempts to understand littering behavior and tests different interventions aimed to reduce trash on Staten Island, NY. The findings presented here, include the results of an opinion survey done in situ at the Staten Island Mall and the St. George Ferry Station (n= 57). In addition, categories are suggested for the analysis of the open-ended questions in the main opinion survey (n=622) done online. The analyses of the open-

ended questions imply that littering behavior can be altered. Specifically, littering behavior can be altered through a series of positive reinforcement that will be implemented within the experimental design. The experimental design for the CSI project on the psychology of littering will be discussed.

POSTER #22

Neonatal Stimulation of PKC Epsilon Signaling Rescues Oxytocin Signaling and Later Life Social Behavior in Fmr1 KO Mice

Youstina Soliman

Faculty Mentor: Professor Probal Banerjee
Department of Psychology

Fragile X Syndrome (FXS), caused by mutation of the Fmr1 gene, is characterized by autistic-like social behavior deficits. Using an Fmr1 knockout (KO) mouse model, we have observed a significant suppression of the FMRP, which is a Fragile X Mental Retardation Protein which is encoded by the Fmr1 gene, that target protein kinase C epsilon (PKC) in the hypothalamic parventricular nucleus (PVN). To compensate for this PKC suppression, we administered (i.p.) a selective PKC activator, dicyclopropyl-linoleic acid (DCPLA), into postnatal day 6-14 (P6-14) mice and studied its effect on PVN expression of oxytocin (OXT). An observed suppression of OXT+ cell number in the KO PVN at P20 was eliminated in the DCPLA-pretreated mice and reinstated in KO mice pretreated with DCPLA plus a selective PKC inhibitor. Moreover, neonatal DCP-LA treatment rescued hyper-anxiety and social behavior deficits in adult (P60) KO mice. Thus, we present a novel strategy to correct aberrant brain development and accompanying behavioral deficits in FXS by neonatal activation of PKC. Our current objective is to elucidate the precise neuronal mechanisms by which DCPLA rescues oxytocin synthesis in the PVN. One such mechanism may be the correction of changes in neuronal excitability that may arise from loss of PKC expression. To address this possibility, we have examined expression of the protein C-fos in the WT versus KO PVN, as a marker of neuronal excitation.

POSTER #88

Participatory Studies: Key to Eradicating Autism Stigma?

Nicholas Tricarico (The Verrazano School), Paula Bongiovanni

Faculty Mentor: Professor Kristen Gillespie-Lynch
Department of Psychology

High school and college students with autism spectrum disorders (ASD) are negatively impacted by inadequate knowledge or misconceptions surrounding ASD. Previous studies have demonstrated that a brief online autism training may be an effective way to reduce stigma and increase college students' understanding and acceptance of classmates on the spectrum (Gillespie-Lynch et al., 2015). Past research with high school students suggests that there may be specific challenges associated with modifying attitudes and behavioral intentions among adolescents towards their autistic peers (Staniland & Byrne, 2013). Thus, we have developed an interactive, online participatory training in order to reduce explicit stigma associated with ASD.

Training development has been an iterative process. A team of high school students initially adapted the online training we had developed for college students (e.g., Gillespie-Lynch et al., 2015) to make it more engaging for their peers. Later, the high school students collaborated with two autistic college students to create a more engaging training that featured videos of two autistic college students discussing their perspectives on autism. We then tested this adapted training with 53 high school students. Students completed a pre-test assessing autism knowledge and stigma (using a social distance scale), the training, and a post-test. The post-test was administered either immediately after training or one week later depending on scheduling constraints. Repeated measures ANOVAs with

stigma at pre- and post-test as the within-subjects variable and gender and time when the post-test was completed as between subjects variables revealed no changes in stigma associated with training ($p = .89$). A repeated measures ANOVA with autism knowledge as the within-subjects variable and the same between subjects variables revealed improvements in knowledge with training, $F(1,48) = 4.58$, $p = .04$. These findings indicate that the autism training may be effective at increasing knowledge about autism but not in changing stigma, at least among high school students. In future studies, we look to find the reasons for such findings.

POSTER #73

Discovery in the Ordinary: Mothers Teaching Designed Actions of Common Artifacts

Christina Viso (The Verrazano School)

Faculty Mentor: Professor Lana Karasik
Department of Psychology

Ordinary artifacts—containers, cabinets, clothing, etc.—are designed with specific actions in mind for use. Typically, twisting, pulling, buttoning, and other designed actions are hidden even if a lid, handle, or button may signal where to act. Once you discover the action, using these common artifacts become habitual. For children, how things open is not obvious and must be learned. In this study, we examined how mothers (n=135) teach their 12- to 36-month-olds to open "twist-off" or "pull-off"containers. Specifically, we coded whether mothers modeled the designed action, expecting infants to know nothing about the action; highlighted information, hinting about the action or where object to act; and offered encouragement, expecting children to discover how to open on their own.

We hypothesized that mothers of older children will encourage exploration of the designed action because their children may not need help. While mothers of younger children will highlight the designed action immediately, expecting children to be inefficient in their discovery. Preliminary data show all mothers encourage exploration. With age, mothers increasingly helped with discovery of the designed action (M=2% and 20%, for younger and older children). We will examine within- and across-trial differences in how mothers teach designed actions as children age. The task of opening containers presents a rich model system for studying how children learn culturally relevant skills in a social context along with the importance of adults as reservoirs of valuable information.

POSTER #27

Eye Movements in Speedreading

Maxim Yeremenko

Faculty Mentor: Professor Irina Sekerina
Department of Psychology

There are many commercial speed reading programs that claim they can train people to read multiple times faster than their normal speed without any loss in comprehension. Psycholinguists such as Keith Rayner argue that it is impossible to increase reading speed without loss of comprehension. To test the claims made by commercial programs, I am conducting an eye-tracking case study with the 7speedreading software. Three participants read a 3-paragraph text from the classical literature as a pre-test while I recorded their eye movements and evaluated their speed of reading and comprehension of the text. Currently, the participants are undergoing a 21-day training with the 7speedreading program. Once the training is complete, I will do a post-test to see if there are improvements in their speed of reading and whether their comprehension remains the same by recording their eye movements in a post-test. I expect my results to contribute to our understanding of whether the claims made by commercial speed-reading program are confirmed.

SOCIAL WORK

CONFERENCE LOCATION:
BOTTOM BACK

POSTER #69

Society's Perspective Towards the Disabled, Particularly Dwarfism

Samantha Wong

Faculty Mentor: Professor Esther Son
Department of Social Work

The study investigated society's awareness and view of the disabled community with emphasis on dwarfism. It also looked at what stereotypes are reinforced through society and the media and whether or not learning occurs through education about the disabled. The general concept of physical disabilities and then a slow progression to the main topic of dwarfism was looked at through people's attitudes when viewing individuals with a disability in public. An exploratory qualitative study was conducted, using semi- structured, in-depth interviews with each participant. Eight participants were 18 years or older. Participants were of the general population who did not have a disability or know anyone who was closely related to them and had a disability. Interviews were transcribed and coded using thematic analysis. The findings have identified several themes such as barriers to advocacy for dwarfism and facilitator of public awareness. The theme, facilitator of public awareness, also includes selected subthemes such as education and media. It is important that society is educated so that they know what is right or wrong, and the majority of participants agreed that there is a need to advocate for public awareness of dwarfism. Implications for this study are that this topic may be included in future educational curriculums in early education forums.

Research Paper Presentations—Student Scholars

PAPER#/STUDENT	FACULTY MENTOR	DEPARTMENT
1 Nadia Davis	Esther Son	Social Work
2 Catharina Carone	Chiara Ferrari	World Languages and Literature
3 Elaine Minew	Gerry Milligan	World Languages and Literature
4 Jerry Ortiz	Emily Rice	Engineering Science and Physics
5 Vincent Quercia	Stephen Morris	Philosophy
6 Nardeen Eskaros	Alfred Levine	Engineering Science and Physics

Undergraduate Conference on Research, Scholarship, and Performance—Student Scholars

POSTER#/STUDENT	FACULTY	DEPARTMENT
1 Danielle Aylmer	Timothy Ricker	Psychology
1 William Frickenstein	Timothy Ricker	Psychology
2 Gregory Major	Timothy Ricker	Psychology
2 Hamza Tariq	Timothy Ricker	Psychology
3 Lena Maria Cotter	Anat Niv-Solomon	Political Science and Global Affairs
4 Brandon Lei	Jean-Phillipe Berteau	Physical Therapy
5 Maaz Syed	Feng Gu	Computer Science
5 Tatiana Anderson	Feng Gu	Computer Science
6 Nicholas Cirrone	Timothy Ricker	Psychology
6 Priscilla Hutchinson	Timothy Ricker	Psychology
7 Alyssa Caccavale	Deborah Brickman	Accounting and Finance
8 Elizabeth Rassi	Deborah Brickman	Accounting and Finance
9 Catherine Cunningham	Regina Gonzalez-Lama	Nursing
10 Aneesha Nadukudiyil Jose	Rupal Gupta	Chemistry
11 Nicolette Guida	Katharine Goodland	English
12 Valona Frangu	Dan Zhang	Marketing
13 Andrea Matteo	Stephanie Schmier	Curriculum and Instruction
14 Eric Cundari	Deborah Brickman	Accounting and Finance
15 Achaea Manzano-King	Regina Gonzalez-Lama	Nursing
15 Madeline Drago	Regina Gonzalez-Lama	Nursing
15 Helen Fok	Regina Gonzalez-Lama	Nursing
15 Tina Pontebbi	Regina Gonzalez-Lama	Nursing
16 Christopher Costello	Paolo Cappellari	Marketing
17 Iryna Pylypchuk	Timothy Ricker	Psychology
18 Jeremy Merchant	Regina Gonzalez-Lama	Nursing
19 Jeremy Merchant	Dawn Fairlie	Nursing
20 Nicole Pillarella	Krishnaswami Raja	Chemistry
20 Nicole Zubrich	Krishnaswami Raja	Chemistry

Undergraduate Conference on Research, Scholarship, and Performance—Student Scholars (cont.)

POSTER#/STUDENT	FACULTY	DEPARTMENT
21 Samantha D'Angelo	Stephanie Schmier	Curriculum and Instruction
22 Youstina Soliman	Probal Banerjee	Psychology
23 Michael Scorie	Louis Rotondo	Psychology
24 Angelica Stringer	Deborah Brickman	Accounting and Finance
25 Sara Beardsley-Eide	Rebecca Chamberlain	Biology
26 Douglas Encarnacion	Isabel Rechberg	Management
27 Maxim Yeremenko	Irina Sekerina	Psychology
28 Michelle P. Lvovich	Dan Zhang	Marketing
29 Matthew Keegan	Simone Wegge	Economics
30 Lisa Manitta	Jean-Phillipe Berteau	Physical Therapy
31 Kailie Yuan	Xiaowen Zhang	Computer Science
32 Gabriella Clemente	Barbara Schiano	Nursing
33 Melissa Ravelo	Isabel Rechberg	Management
34 Gil Barahman	Alan Lyons	Chemistry
35 Cassandra Hyppolite	Regina Gonzalez-Lama	Nursing
35 Zana Barrow	Regina Gonzalez-Lama	Nursing
35 Maria Decesare	Regina Gonzalez-Lama	Nursing
35 Tema Regist	Regina Gonzalez-Lama	Nursing
36 Lesya Hrytsiv	Regina Gonzalez-Lama	Nursing
36 Nadiya Khmil	Regina Gonzalez-Lama	Nursing
36 Linda Osei	Regina Gonzalez-Lama	Nursing
36 Almira Ranovic	Regina Gonzalez-Lama	Nursing
37 Kellyanne R. Caruso	Regina Gonzalez-Lama	Nursing
38 Moet Askew	Robert Allen	Marketing
39 Fabienne Geara	Patricia Brooks	Psychology
39 Alexandria Garzone	Patricia Brooks	Psychology
39 Fiza Akram	Patricia Brooks	Psychology
40 Monica Fining	Jean-Phillipe Berteau	Physical Therapy
41 Tiffany Galbo	Timothy Ricker	Psychology
42 Arouje Shaikh	Nancy Liu-Sullivan	Biology
42 Briana Soto	Nancy Liu-Sullivan	Biology
42 Fatima Rizwan	Nancy Liu-Sullivan	Biology
42 Jay Xiangliu Yang	Nancy Liu-Sullivan	Biology
42 Monnique Johnson	Nancy Liu-Sullivan	Biology
42 Norhan Sobhi	Nancy Liu-Sullivan	Biology
42 Brianna Sampson	Nancy Liu-Sullivan	Biology
43 Nicole Zubrich	Krishnaswami Raja	Chemistry
44 Kristen Parente	Daniel Kaplin	Psychology
44 Fernanda Moura	Daniel Kaplin	Psychology
45 Jamye Moya	Sebastien Poget	Chemistry

Undergraduate Conference on Research, Scholarship, and Performance—Student Scholars (cont.)

POSTER#/STUDENT	FACULTY	DEPARTMENT
46 Arshia Lodhi	Patricia Brooks	Psychology
46 Batool F. Shirazi	Patricia Brooks	Psychology
46 Paloma T. Zacarias	Patricia Brooks	Psychology
46 Elizabeth S. Che	Patricia Brooks	Psychology
47 Joeffre Ubalde	Regina Lama	Nursing
48 Monnique Johnson	Nancy Liu-Sullivan	Biology
49 Christopher Paradiso	Natacha Gueorguieva	Computer Science
50 Ellie Theodorakis	Kathryn Chadman	Biology
51 Patricia Ann Mendoza	Kathryn Chadman	Biology
52 Robert Ferrando	Stephen Wollman	Mathematics
53 Tyler Crespi	Alan Zimmerman	Marketing
54 Crysta Frassetti	Alan Zimmerman	Marketing
55 Ariel Kleydman	Kathryn Chadman	Biology
56 Brian Keegan	Natacha Gueorguieva	Computer Science
57 Menaka Dodampe Gamage	Isabel Rechberg	Management
58 Mobin Uddin Chowdhury	Aleksander Haber	Engineering Science and Physics
59 Edward Heavey	Aleksander Haber	Engineering Science and Physics
60 Melvin Summerville	Aleksander Haber	Engineering Science and Physics
61 Dana Friedman	Sarah Berger	Psychology
62 Saad Pascale	Sarah Berger	Psychology
63 Christina Dequieno	Soon Ae Chun	Marketing
64 Corey Plate	Dan McCloskey	Psychology
65 Gianna Cirrone	Dan McCloskey	Psychology
66 Mohammad Bazrouk	Krishnaswami Raja	Biology
67 Marc Girgenti	Alan Zimmerman	Marketing
68 Dominic Klusek	Natacha Gueorguieva	Computer Science
69 Samantha Wong	Esther Son	Social Work
70 Cassidy Iannariello	Krishnaswami Raja	Chemistry
70 Michael Bucaro	Krishnaswami Raja	Chemistry
70 Lorraine Chawki	Krishnaswami Raja	Chemistry
71 Ammara Azam	Michal Kruk	Chemistry
72 Tirza Lehrfield	Lana Karasik	Psychology
72 Wai Sum Alzina Fok	Lana Karasik	Psychology
73 Christina Viso	Lana Karasik	Psychology
74 Mafanta Kajakhe	Dan McCloskey	Psychology
75 Gaia Fabj	Emily Rice	Engineering Science and Physics
76 Cody Barshaba	Patricia Brooks	Psychology
77 Aaron Malinoski	Shi Jin	Chemistry
78 Oluwatomisin Oredipe	Michal Kruk	Chemistry
79 Viktoriya Vorobyova	Alan Zimmerman	Marketing

Undergraduate Conference on Research, Scholarship, and Performance—Student Scholars (cont.)

POSTER#/STUDENT	FACULTY	DEPARTMENT
80 Damilola Kolade	Ellenge Denton	Psychology
81 Kasey Reems	Barbara Griffiths	Nursing
82 Natalia Fraczek	Jennifer Wagner	Psychology
83 Aviva Lehrfield	Jennifer Wagner	Psychology
84 Matthew Newman	Anat Niv-Solomon	Political Science and Global Affairs
85 Lorenza Colonna	Christina Hagedorn	Linguistics
86 Casey Wade	Barbara Schiano	Nursing
87 Jenifer Sacaccio	Leora Yetnikoff	Psychology
88 Nicholas Tricarico	Kristen Gillespie-Lynch	Psychology
88 Paula Bongiovanni	Kristen Gillespie-Lynch	Psychology
89 Alexandra Cosenza	Kristen Gillespie-Lynch	Psychology
89 Faith James	Kristen Gillespie-Lynch	Psychology
90 Vincent Lee	Kristen Gillespie-Lynch	Psychology
91 Anthony Astarita	Halil Ozen	Political Science and Global Affairs
91 Rebecca Del Vecchio	Halil Ozen	Political Science and Global Affairs
92 Cid Aurora	Emily Rice	Engineering Science and Physics
93 Mohammad Mustafa Hashimi	Jennifer Wagner	Psychology
94 Mone Skratt Henry	Christina Tortora	English
95 Alia Mambetalieva	Greg Phillips	Biology
95 Yan Mei Nie	Greg Phillips	Biology
95 Albert Ptashnik	Greg Phillips	Biology
95 Emily Schnall	Greg Phillips	Biology
95 Stephanie Maisano	Greg Phillips	Biology
95 Nicole LaMassa	Greg Phillips	Biology
96 Jessica Post	Regina Gonzalez-Lama	Nursing
96 Christina Gargiulo	Regina Gonzalez-Lama	Nursing
96 Megan Coleman	Regina Gonzalez-Lama	Nursing
96 John Lin	Regina Gonzalez-Lama	Nursing
97 Andrew Bastauross	Probal Banerjee	Psychology
98 Andrew Morchik	Alfred Levine	Engineering Science and Physics
98 Marco Salib	Alfred Levine	Engineering Science and Physics
99 Hassan Fares	Alfred Levine	Engineering Science and Physics
100 Joseph Familiare	Alfred Levine	Engineering Science and Physics
100 Jack Saintange	Alfred Levine	Engineering Science and Physics
101 Randa Naim	Alfred Levine	Engineering Science and Physics
101 Dharshika Malwana	Alfred Levine	Engineering Science and Physics
102 Floros Anastasiou	Alfred Levine	Engineering Science and Physics
102 John Donofrio	Alfred Levine	Engineering Science and Physics
103 Alex Avila	Alfred Levine	Engineering Science and Physics

Undergraduate Conference on Research, Scholarship, and Performance—Student Scholars (cont.)

POSTER#/STUDENT	FACULTY	DEPARTMENT
103 Steve Huerfano	Alfred Levine	Engineering Science and Physics
104 Ross Inserra	Nora Santiago	GIS Services
105 Madrona Boutros	Abdeslem El Idrissi	Biology
106 Bharat Sharma	George Vachadze	Economics
107 Eric Yang	George Vachadze	Economics
108 Crystal Frias	Chris Verene	Performing and Creative Arts
109 Mohamed Al Sharif	Sharon Loverde	Chemistry
110 Samantha Bergen	Irina Lyublinskaya	Education
111 Vincent Crescente	Sarah Zelikovitz	Computer Science
112 Shannon Milone	Shuqun Zhang	Computer Science
113 Brandon Fridman	Fred Naider	Chemistry
114 Jacob Solanki	Fred Naider	Chemistry
115 Soyean Park	Yumei Huo	Computer Science
116 Nicole Pillarella	Krishnaswami Raja	Chemistry
117 Malak Daou	Krishnaswami Raja	Chemistry
118 Regina Klimchuk	Krishnaswami Raja	Chemistry
119 Andrew Cardozo	Yumei Huo	Computer Science
120 Xena Flowers	Jeffrey Goodman	Neurobiology
121 Kristen Gilbride	Patricia Galletta	Accounting and Finance
122 Nicholas Esposito	Patricia Galletta	Accounting and Finance
123 Michael Cannizzaro	Patricia Galletta	Accounting and Finance
124 Jenea Castellano	Daniel Gagliardi	Marketing
125 Matthew Bessler	Sos Agaian	Computer Science
126 Victor Ramirez	Cesar Arenas-Mena	Biology
127 Alexis Gorin	Zaghloul Ahmed	Physical Therapy
127 Omar Elwany	Zaghloul Ahmed	Physical Therapy
128 Adrianna Najchow	Valerie Tevere	Media Culture
129 Joan Mbamaonyeukwu	Comfort Asanbe	Psychology
130 Kiran Imtiaz	Bertram Ploog	Psychology
130 Alyssa Carpentieri	Bertram Ploog	Psychology
130 Nada Mohamed	Bertram Ploog	Psychology
131 Sheng Wang	Alfred Levine	Engineering Science and Physics
132 Olivia Ayala	Jason Bishop	English (linguistics)
132 Alexandria Boachie-Ansah	Jason Bishop	English (linguistics)
133 Olawunmi Arowolo	Valkiria Duran-Narucki	Psychology
134 Brian Raleigh	Dominick Tancredi	Performing and Creative Arts
135 Fatima Inusa	Probal Banerjee	Chemistry
136 Marwa Shueib	Bertram Ploog	Psychology
136 Adaeze Hezeh	Bertram Ploog	Psychology

Undergraduate Conference on Research, Scholarship, and Performance—Student Scholars (cont.)

POSTER#	STUDENT	FACULTY	DEPARTMENT
137	Mario Fontana	Regina Lama	Nursing
137	Joann Flinn	Regina Lama	Nursing
137	Frank Couso	Regina Lama	Nursing
137	Ross Horowitz	Regina Lama	Nursing
138	Samantha Brandt	Jane Marcus Delgado	Political Science and Global Affairs
139	Piotr Marciniec	Li Ge	Engineering Science and Physics
140	Michael Adejokun	Chang-Hui Shen	Biology
140	Diana Laterman	Chang-Hui Shen	Biology
141	Nicole Dushkin	Chang-Hui Shen	Biology
141	Daniel Krichavets	Chang-Hui Shen	Biology
141	Jaijo Matthew	Chang-Hui Shen	Biology
141	Hareem Richards	Chang-Hui Shen	Biology
142	Fatu Amara	Zaghloul Ahmed	Physical Therapy
143	Marina Ghobrial	Alejandra Alonzo	Biology
144	Izabella Beniaminova	Alejandra Alonzo	Biology
145	Joseph Oreste Longo	Alejandra Alonzo	Biology
146	Aziza Jurabaeva	Max Gottlieb	Accounting and Finance
147	Zeqja Vjosana	Michael Kress	Computer Science
148	Louis Pisicolo	Deborah Sturm	Computer Science
149	Ethan Binyaminov	Deborah Sturm	Computer Science
150	Tugba Camci	Jillian Baez	Media Culture
150	Katherina Opazo	Jillian Baez	Media Culture
151	Carlos Merina	Robert Corin	Biology
152	Elizabeth de Stefano	Edward Miller	Media Culture
153	Sixto Encalada	Alfred Levine	Engineering Science and Physics
153	Evan Donovan	Alfred Levine	Engineering Science and Physics
154	Jaclyn LaLima	Bryan Weber	Economics
155	Ping Wang	Sebastien Poget	Chemistry
156	Joseph Ferretti	Alfred Levine	Engineering Science and Physics
156	Kadiatou Drame-Sheriff	Alfred Levine	Engineering Science and Physics
157	Jonathon Torres	Susan Sullivan	Curriculum and Instruction

Acknowledgments

Dan Auerback	Performing and Creative Arts
Lorraine Brocato	Academic Affairs
Cheryl Craddock	The Verrazano School
Celeste Faiella	Academic Affairs
Jean Ford	Building and Grounds
Donna Garambone	Alumni Relations
Philip Halsey	Reprographics
Donald Hudec	CSI Student Government
John Jankowski	Center for the Arts
Debbie Mahoney	President's Office
Jodi Merendino	Auxiliary Services
Michael Morreale	Performing and Creative Arts
Delia Rios	Academic Affairs
Ann Rodberg	Design Services
Anita Romano	Macaulay Honors College
Jessica Stein	Academic Affairs
Jennifer Straniere	Performing and Creative Arts
Joyce Taylor	Web/Technical

We extend a special thank you to our sponsors for their generous financial support: Undergraduate Research Awards sponsored by the CSI Foundation and CUNY's Coordinated Undergraduate Education (CUE) program; CUNY Office of Research; the CSI Alumni Association; and the CSI Student Government.

Organizers

Christine Emeran, Amanda Strano and Margaret-Ellen (Mel) Pipe

For comments and questions, contact:
Office of the Associate Provost for Graduate Studies, Research, and Institutional Effectiveness
College of Staten Island
2800 Victory Boulevard, Building 1A, Room 211, Staten Island, NY 10314
718.982.2341; christine.emeran@csi.cuny.edu

The committee gratefully acknowledges the contributions of the many individuals who helped make this conference possible.