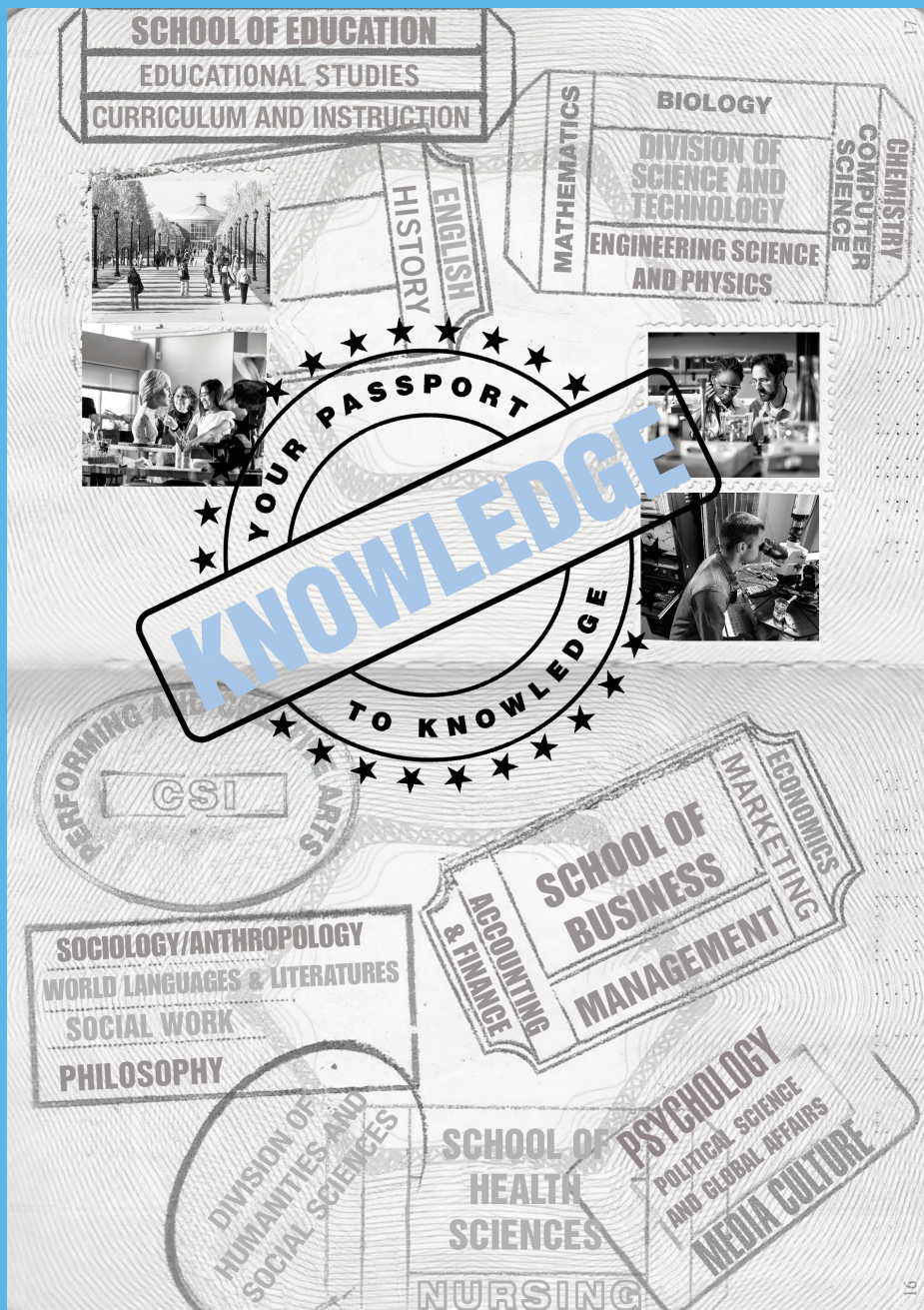


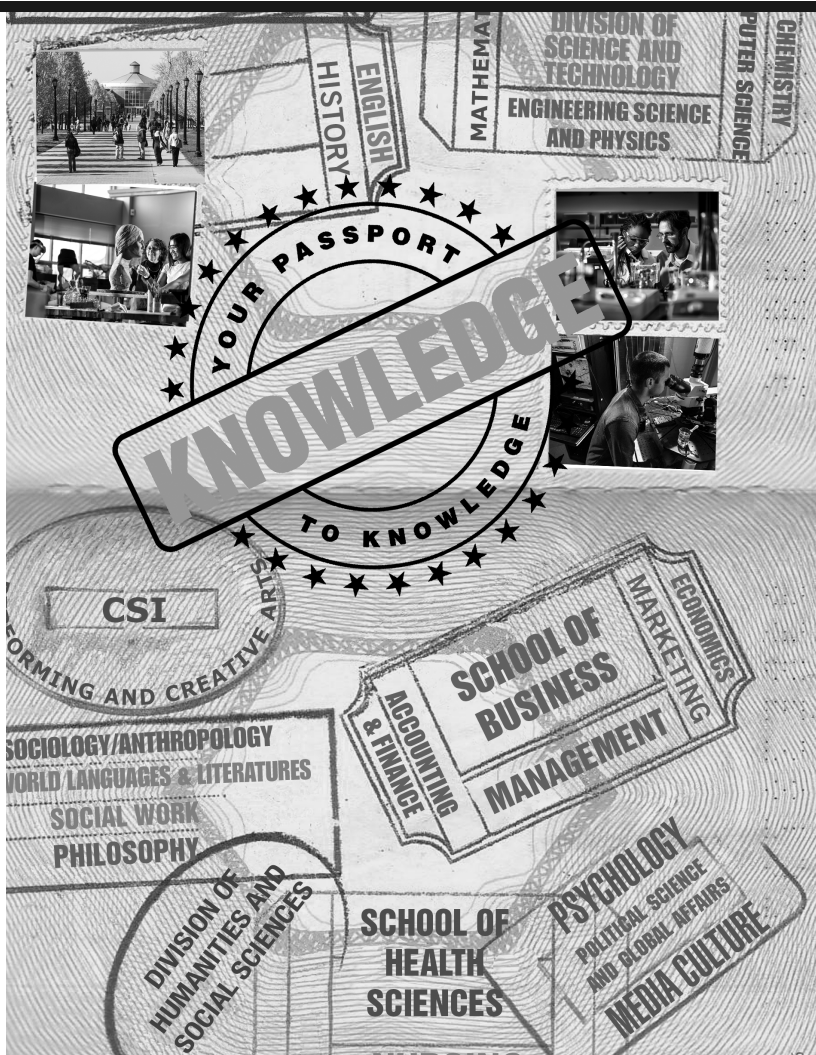
# CSI UNDERGRADUATE CONFERENCE ON RESEARCH, SCHOLARSHIP, AND PERFORMANCE

## THURSDAY, APRIL 21, 2016



THE CITY UNIVERSITY  
OF NEW YORK

**College of  
Staten Island** **CUNY**



# CSI UNDERGRADUATE CONFERENCE ON RESEARCH, SCHOLARSHIP, AND PERFORMANCE\*

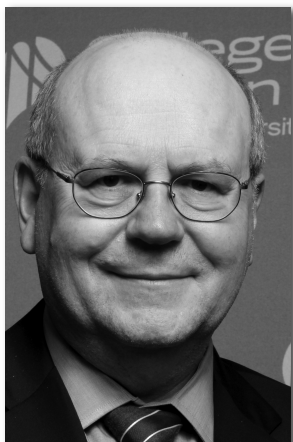
**Thursday, April 21, 2016**  
**Center for the Arts, 1P-Atrium**  
**11:00am - 4:30pm**

\*Sponsored by the Division of Academic Affairs with funding from  
the CSI Student Government, the Office of Alumni Relations, and the CSI Foundation

### CSI Undergraduate Conference on Research, Scholarship, and Performance 2016

#### Conference Schedule—Thursday, April 21, 2016

1:15am - 12:05pm	CSI Chamber Music Recital Recital Hall 1P-120
Noon - 4:30pm	The Gallery of the College of Staten Island 1P-112
12:15pm	Lunch available for participating students and mentors 1P-116 - pick up
1:15 pm - 2:15pm	Plenary Session —Opening remarks from Gary Reichard —“The Time Tested Triumph of Teamwork” Dan McCloskey PhD, Associate Professor of Psychology —Già il sole dal GangeAlessandro Scarlatti (1659-1725) —O bei nidi d'amore Stefano Donaudy (1879-1925) —Willow Weep for Me Ann Ronell (1906-1993) Faith Walton, soprano William R. Bauer, piano —French Suite No. 5 in G major, BWV 816 Allemande Gigue Johann Sebastian Bach (1685-1750) Xingru Duan, piano Williamson Theatre, 1P-111
2:15pm - 4:15pm	Poster Presentations 1P-Atrium, East and West Lounges
2:30pm - 3:15pm	CSI Big Band Recital Hall 1P-120
2:30pm - 4:30pm	Paper Presentations 1P-223
2:30pm - 4:30pm	Paper Presentations 1P-202
2:30pm - 4:30pm	Paper Presentations 1P-222
2:30pm - 4:30pm	CSI Student Art Exhibitions Art Gallery, 1P-118B
2:30pm - 4:30pm	CSI Sculpture Exhibition Atrium - The Glass Case
3:00pm - 3:45pm	Dance Program Dance Studio 1P-220



## **CSI Undergraduate Conference on Research, Scholarship, and Performance**

### **Message from the President**

It is my pleasure to welcome you to the 15th Annual Undergraduate Conference on Research, Scholarship, and Performance.

The conference theme, “Your Passport to Knowledge,” exemplifies the breadth and depth of knowledge and talent of our undergraduate students. This annual event showcases the intellect and talent of CSI students, as well as the commitment of our faculty to provide a world-class education for our students. It is through the guidance of and the collaboration with CSI faculty that our students are able to construct research, scholarship and performances of the outstanding caliber that you will enjoy today.

This year we have over 280 participants in the conference representing an extensive range of disciplines within the College. This year's presentations include abstracts being presented either by individual students or groups of students, musical and dance performances, and student exhibitions of works of art. You will have the opportunity to immerse yourself in creative musical and dance performances, rigorous analyses of social scientific and literary ideas and theories, and meticulous mathematical and scientific investigations and inquiries.

It is important to note that CSI Undergraduate Research Awards sponsored by the CSI Foundation supported 24 of our students' research projects. This year we received additional funding from the CUNY Coordinated Undergraduate Education program which supported an additional 81 research projects. We are also extremely grateful to the Office of Academic Affairs for their financial support.

I would like to acknowledge Fausto Canela and Philip Halsey, who have assisted our student participants by providing workshops and technical assistance that enabled them to enhance the visual components of their presentations; Jessica Stein, Delia Rios, Barbara Verteramo and Nina Salvatore, Office of the Provost, all of whom created a great team that handled a myriad of tasks and details. Lastly, I would like to thank Charles Liu, Professor of Engineering Science and Physics and Jonna DeSantis, Office of Academic Affairs for coordinating the conference.

I would also like to thank the Alumni Association for donating tee shirts for the volunteers; Design Services; the Center for the Arts for their technical support; Media Services; members of the planning committee for the Conference; and the Verrazano School and Macaulay Honors College volunteers for taking the time to assist with the organization of this event.

I am indeed proud that this conference represents a true collaboration of the College community, and I appreciate the many roles played by all in presenting today's events, which highlights the critical research, scholarship and experimentation that define and enhance the college experience.

Congratulations to each and every one of today's participants!

Sincerely,

A handwritten signature in black ink, reading "WJ Fritz", followed by a long horizontal line extending to the right.

William J. Fritz, PhD  
President





The Department of Performing and Creative Arts

Presents

# An Art, Dance, and Music Exposition

at

The 15th Annual  
CSI Undergraduate Conference  
on Research, Scholarship,  
and Performance

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

Center for the Arts  
Thursday, April 21, 2016

**THE RECITAL HALL, 1P-120**

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**CSI CHAMBER MUSIC RECITAL**

11:15am –12:05pm

*A showcase of chamber music featuring students of the CSI Music Program*

Prof. William Bauer, Performance Coordinator

**Program**

Oh! Had I Jubal's Lyre, Aria from *Joshua* ..... George Frideric Handel (1685-1759)

Melissa Casertano, soprano      William R. Bauer, piano

Già il sole dal Gange ..... Alessandro Scarlatti (1659-1725)

O bei nidi d'amore ..... Stefano Donaudy (1879-1925)

Willow Weep for Me. .... Ann Ronell (1906-1993)

Faith Walton, soprano      William R. Bauer, piano

French Suite No. 5 in G major, BWV 816 ..... Johann Sebastian Bach (1685-1750)

Allemande

Courante

Sarabande

Gavotte

Bourrée

Loure

Gigue

Xingru Duan, piano

Rondo in C Major, K. 373..... Wolfgang Amadeus Mozart (1756-1791)

Dan Auerbach, violin      Xingru Duan, piano

**THE WILLIAMSON THEATRE 1P-111**

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**PLENARY SESSION**

1:15pm – 2:15pm

**Performance section**

Prof. William Bauer, Performance Coordinator

Già il sole dal Gange . . . . . Alessandro Scarlatti (1659-1725)  
O bei nidi d'amore . . . . . Stefano Donaudy (1879-1925)  
Willow Weep for Me. . . . . Ann Ronell (1906-1993)

Faith Walton, soprano      William R. Bauer, piano

French Suite No. 5 in G major, BWV 816 . . . . . Johann Sebastian Bach (1685-1750)  
    Allemande  
    Gigue

Xingru Duan, piano

**THE RECITAL HALL, 1P-120**

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**CSI BIG BAND**—featuring student arrangements

2:30pm – 3:15pm

Prof. Michael Morreale, Director

*The CSI Big Band explores literature of that genre ranging from swing to modern with an emphasis on clarity and ensemble performance and development of each individual player's musicianship.*

*Today's performance features musical arrangements by students who have taken courses in Jazz Harmony and Jazz Arranging included in the BS Concentration in Jazz Studies and Performance. Three students; Faith Walton (class of 2016), and Grove Rune and Jose Mendez (both class of 2015) have earned the BS Concentration in Jazz Studies and performance. We are also proud to include the arrangements of seniors Hanna Cosgriff, Andrew Robles, and Alfred DeRosa from the CSI Music Program.*

***The CSI Big Band***

Thomas Aquino—drums

Folaranmi Aremu-Bashir—trombone

Brandon Bivings—piano

Thomas Christy—electric bass

Trevor Clark—drums

Alfred DeRosa—piano

Kyle Henry—alto saxophone

Jennie Lee—guitar

Mauricio Lopez—trumpet

Tyrae Matos—tenor saxophone/clarinet

Andrew Robles—trombone

Michel Simanovsky—baritone saxophone

Steven Urcinoli—electric bass

**Program**

Fly Me to the Moon . . . . . Bart Howard, arranged by Faith Walton

How High The Moon . . . . . Morgan Lewis, arranged by Hanna Cosgriff

From One Place To Another . . . . . composed and arranged by Jose Mendez

I've Never Been In Love Before . . . . . Frank Loesser, arranged by Grove Rune

The Saga Of Harrison Crabfeathers . . . . . Steve Kuhn, arranged by Andrew Robles

Stolen Moments . . . . . Oliver Nelson, arranged by Alfred DeRosa

Other selections to be announced, subject to change



**THE DANCE STUDIO, 1P-220**

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**CSI DANCE PROGRAM**

3:00pm –3:45pm

***The Art of Making Dances***

Prof. Charles Thomas, dance coordinator for URC

*The Art of Making Dances* is the title of choreographer/teacher Doris Humphrey's 1959 book on how to create dances.

Dance Masala

Music - Collage

Choreography by students supervised by Professor Walter Rutledge

**Section One - *They Don't Care* - performed by Michael Jackson**

Elaine Cortes, Shaw-Na C Gates, Nickeisha O Gittens, Billie Love, Michker Mathurin, Summer Martinez, Ruth Socko

**Section Two - *Hello* - performed by Adele**

Aminata Bangura, Doloross Assouman, Rafiat Banwo, Joshua Bernstein, Matthew G Borik, Megan Collins, Arlinda Draga, Robert T Drake, Ryan P Kennedy, Kerry Rose Leahy, Billie Love, George K Kantzian, Jessica Maldonado, Nicole Manirampa, Megan Mallon, Nicole C Molinell, Katherine Moreno, Vianey Robles, Alejandra N Romero, Kayla Staiano, Ashley Volpe

**Section Three - *Just Playing* - performed by Biggy Smalls**

Samira A Agbere, Awa Gaye, Aicha Bangoura, Kholette A Borneo, John Paul A Diamante, Jessica Giardino, Dana N Geraci, Nickeisha O Gittens, Lily Qing Mei Mai, Marissa Louis Jean, Lauren L Mckenna, De'onna Morton, Salome J Noel, Victoria Noel, Anmet Nunez, Martin M Perez, Kiara J Quashie, Yohanna A Quezada, Authum S Rowe, Evelyn Simmons, Shujun Lv, Aisatu A Trawally, Reineris Velez, Diann J Watson, Siting Ye

Prof. Charles Thomas, dance instructor

**Section 4. *The Dance of Haiti*. Michael Adme, dancer**

**Section 5. Creating From African Dance by Black Dance Workshop Students**

**CSI STUDENT ART GALLERY, 1P-118B**

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**UNDERGRADUATE RESEARCH CONFERENCE EXHIBITION**

2:30pm–4:30pm

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

*Co-curators: Phillip Jarrell, Angel Moran and Jessica Schoberl*

Faculty advisor: Professor Marianne Weil

Alexandra Crimmins

Alisha Monsalvo

Amanda Ramos

Amanda Waldron

Angel Ocampo

Anna Nowicka

Ariana Moy

Brigid Gallagher Davies

Carolyn Weiss

Charles Tagle

Courtney Kennemur

Crystal Fries

Daniel Dorsey

Elena Knyaz

Emily Carrillo

Evette Kahlil

Faith Ann Baird

Galima Mustafina

Gary Pizzolo

Hao Luo

Helena Odinzow

Huiyi Ma

Jack Hu

Jancey Colon

Jenny Mok

Jessica Maldonado

Jessica Schoberl

Jiayong Chen

Jo Cavallo

Joseph DeCandido

Joseph Liss

Juan Gutierrez

Katherine Escandon

Kelly Tolas

Liana Capuana

Margaret Rowan

Melanie Rodriguez

Melissa Hurtado

Mellesa Foster

Michelle Ovchinnikova

Misty Patterson

Mohamad Yaghi

Mone Skratt Henry

Olga Korovina

Patricia Sato

Renee Zadok

Roberta Berman

Ruth Li

Ryan Nieves

Siobhan Granich

Stella Hsu

Stephanie Bryant

Stephanie Castro

Suting Tu

Tonian Tesonero

Zi Yang Xie

**CFA ATRIUM, THE GLASS CASE**

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**CSI SCULPTURE EXHIBITION**

2:30pm - 4:30pm

Professor Marianne Weil, *Assistant Professor of Sculpture*

**Three-Dimensional Multiples**

*By employing multiple copies of a singular object, Intermediate and Advanced Sculpture students, ART 250 and ART 350, developed projects to address a personal, political or social commentary. Creating a flexible rubber mold from their original clay sculpture, students cast at least six multiples. In the final composition, the sculpture is interpreted as part of a group—visually dissimilar from the original. Completed sculptures consider aesthetics, scale, texture, overall form and combine a range of materials that include: plaster, resin and wax*

Alisha Monsalvo  
Dominick Villani  
Emely De Los Santos  
Enrico Cucco  
Faith Ann Baird  
Jessica Schoberl

Jill Sypniewski  
Jonathan Bromley  
Julia Kramer  
Mary Katherine Lynch  
Megan Brown  
Stephanie Cantor

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

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***I can't breathe***

Noon – 4:30pm



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# Research Paper Presentations

Center for the Arts

2:30pm–4:30pm



1P-222

### **PAPER # 4**

#### **A Study of New York City's Evacuation Shelters**

Nicholas Anderson

Faculty Mentor: Professor Cary Karacas  
Department of Political Science and Global Affairs

This paper examines measures taken by the emergency planning officials of New York City in both public and private organizations to prepare the citizens of New York for future disasters. In a post-Hurricane Sandy New York, the emergency shelters and evacuation procedures put in place by NYC officials are requiring more attention due to the increasing severity of storms in the area. Serving approximately 8.5 million people, the city officials of New York face a difficult task of finding ways to inform each person what to do in an emergency as well as provide them with the necessary resources to survive such an event. This paper will discuss the steps taken by the NYC Office of Emergency Management, Department of Homeless Services, Unified Operations Resource Center and others to direct and inform citizens in the event of an evacuation. The importance of having resources readily available as well as having a trained staff who understands the basics of shelter management will be stressed in this paper. The inability for New York City to currently shelter a majority of its citizens will be questioned and discussed.

### **PAPER # 92**

#### **Identity Issues and Humanizing the Other in Tayeb Salih's Season of Migration to the North and Anton Shammas's Arabesques**

Justin Cleveland

Faculty Mentor: Professor Suha Kudsieh  
Department of English

In Tayeb Salih's novel entitled *Season of Migration to the North* (written in Arabic and published in 1966), and Anton Shammas's *Arabesques* (written in Hebrew and published in 1986), the authors confront an immense amount of raw emotion that is difficult to quantify in historical records. To demonstrate their dilemmas, they rely on innovative techniques in storytelling. For example, Salih utilizes a nameless narrator, whereas Shammas employs an eponymous character. The portrayal of these characters gives rise to new methods of exploring complex sociopolitical issues that confront the authors' cultures.

*In Season of Migration to the North*, Salih's narrator weighs in the importance of modernization against traditional values in post-colonial Sudan. To achieve this goal, Salih is prone to use gendered allegories. In *Arabesques*, Shammas uses folklore and experimental forms of storytelling to establish how his homeland dynamically changes after the founding of the new country.

I will examine these novels to explore the futility of appropriating simple answers to complex situations, and to demonstrate how the authors' distinct art of storytelling plays a key role in constructing a more humanized, organic, and authentic experience.

**PAPER # 159**

**Fredrick Douglass's Fictional Portrayal in the Good Lord Bird**

Valeriana Dema

Faculty Mentor: Professor Maria Bellamy  
Department of English

My project will focus on Fredrick Douglass's fictional portrayal as an egotistical philanderer in *The Good Lord Bird*. Critics of the novel have deemed Douglass's portrayal as seeming "downright sacrilegious."

Although Douglass is caricatured in the novel, his portrayal in *The Good Lord Bird* is a useful way to view corruptibility in positions of leadership.

Slave narrative scholars have noted that Douglass's classic, "Narrative of the Life of Frederick Douglass, an American Slave," is an extremely male-centered text because of its ideals of "mastering the master" and attaining freedom through literacy. In his novel, McBride subverts Douglass's masculine slave narrative conventions by giving readers an oral rendering from a deeply flawed young black boy, Henry Shackleford. In particular, Henry's cross dressing allows readers to examine black masculinity and freedom through a new and insightful perspective.

**PAPER # 209**

**A Return to Natural Resilience: Strengthening New York City's Jamaica Bay**

Thomas DePaulo

Faculty Mentor: Professor Cary Karacas  
Department of Political Science and Global Affairs

After Hurricane Sandy exposed New York City's vulnerability to extreme weather events, many began to pay renewed attention to the role of natural areas in lessening the catastrophic impacts of future events. This paper will explore the role of Jamaica Bay in increasing the city's resilience to significant storms. In particular, it will focus on past and current efforts to restore Jamaica Bay to an approximation of its natural state in order for it to play a central role in mitigating the effects of future extreme weather events.

### **PAPER # 210**

#### **The Urban Resilience of New York City: Vulnerable Coast Lines and Rebuilding after Hurricane Sandy**

Vincent Quinn

Faculty Mentor: Professor Cary Karacas  
Department of Political Science and Global Affairs

The risk of coastal flooding has increased with the frequency of big storms and current sea level rise. After the destruction Superstorm Sandy left through much of the tristate area, New York City observed its failures—power outages due to underground infrastructure flooding and inadequate evacuation procedures which effected the city's ability to recover. In multiple areas of Manhattan, a large vulnerable population (e.g. elderly, disabled, and non-English speakers) were left in NYC Housing Authority buildings without power or heat. These city buildings were located in evacuation zones near the water. The New York City Department of City Planning website now lists ways of retrofitting structures to make them more flood resistant and guidelines to build flood resistant buildings. With the city being committed to the "rebuild and armor" approach it is neglecting better ways to prevent further disaster in the future. This paper will explore how the city is approaching resiliency after a catastrophe and whether that approach addresses how we could rebuild with future protection in mind after Hurricane Sandy.

1P-202

### **PAPER # 199**

#### **Controlling Light with Light in a Coherent Perfect Absorber (CPA)**

Mario Bnyamin

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

For a two-sided one-dimensional cavity, the coherent perfect absorber condition can be expressed in terms of the phase and amplitude relations. In the first stage of the project, I reproduced the known result for a single slab in the literature. Let  $L$  be the width of the slab,  $k$  is the propagation wavenumber. Then based on the boundary conditions at the two boundaries of the coherent absorber, I derived a set of coupled equations that determine the relation between the incoming and the transmitted wave amplitudes. To further determine the overall transmission response into semi-finite medium and prepare for the calculation of a multilayer cavity, it is most convenient to work with the matrix formulation, which is known as the transfer matrix. It relates the complex amplitudes of the incident and reflected waves ( $\beta$  and  $a$ ) to that of transmitted wave ( $\beta$   $r$ ) on the other side. With the help of this relation, I was able to determine the condition of CPA in this geometry in terms of the wavenumber and the absorption coefficient (given by the imaginary part of the refractive index).

This single-layer structure, nevertheless, does not allow the control of a strong signal by a weak control, simply because of the mirror symmetry of the system. To go beyond this limit and what is in the literature, we studied a two-layer structure which showed the expected behavior in the absorber: We were able to switch between perfect absorption and a significant amount of transmission using a control beam that is only one fourth in amplitude when compared with the signal beam. In the future we will further optimize the design of the CPA and discuss possible experimental realizations with other groups.

**PAPER # 161****How Teachers Can Help Early Readers Learn How to Read for Information**

Andrew Ferrera

Faculty Mentor: Professor Judit Kerekes  
Department of Curriculum and Instruction

When a child first learns how to read, they are not reading for comprehension or working on fluency. Early readers are simply reading to develop their concepts of print, word recognition, and simply figuring out how a book goes. This is why many times you can see a kindergarten student who is an early reader read a book, and then if you ask them what they just read, they can't tell you. They weren't reading for comprehension, they were just reading words on a page. Reading for comprehension is something that must be taught. Children must be given a reason to remember all those words they have to read, a reason to comprehend their books.

I believe that if you motivate early readers, you can help them make the transition from reading words, to reading for comprehension. I have been doing research in a kindergarten classroom for the past four weeks. In my poster I will show a lesson I did with a kindergarten class which motivated the children to read their books for comprehension. I first modeled for the class how I would read a book for information. I told the students that I will read a book to them, and as I read the book, I will be looking for important information. I will use post-it paper to save the pages where the important information was in the book. Then, when we were finished reading, I had a prop microphone which I used to report back to the class about my book, and the important information I found when reading my book. I then sent the children off to read their books independently and find the important parts of their books. Then the children shared the important parts of their books with their Reading Partners. When they were finished sharing, I let several of them come to the front of the class and report back to their classmates the important parts of their books. They enjoyed reporting to the class, and this motivated them to find the information in their books, which means they were comprehending their reading.

**PAPER # 202****Visualization of the Unseen Pathways of Marine Contaminants**

Stephen Giglia (Macaulay Honors College)

Faculty Mentor: Professor David Lindo-Atichati  
Department of Engineering Science and Physics

The overarching goal of this project is to better visualize how marine contaminants interact with marine water masses and to provide comprehensive tools for environmental assessment. Specifically, I have two objectives: To effectively visualize fine-scale structures of marine emerging contaminants in 2D and in 3D. I will learn from Professor Lindo-Atichati on how to use open-source visualization tools such as Matlab, Gephi or Blender. The 2D tools will allow me to shed light on the two-dimensional connectivity pathways of marine emerging contaminants. The 3D tools will allow me to create stunning rendering images of marine emerging contaminants.

### **PAPER # 190**

#### **Investigation of the Behavioral Effects of Alzheimer-like Pseudophosphorylated TAU**

Jemima Alice Kadima

Faculty Mentor: Professor Alejandra Alonso  
Department of Biology

Alzheimer's disease is degenerative and affects the brain through memory deficit. Patients exhibit symptoms such as memory loss. Recent studies have shown a correlation between Alzheimer's disease and TAU phosphorylation. A combination of hyperphosphorylated TAU and disrupted microtubules has a correlation to Alzheimer's disease. TAU is a protein which aids in the assembly of microtubules. By generating Pseudophosphorylated TAU, studies have shown that it aggregates in cells when Thr212 is mutated to Glu which facilitates TAU self-assembly. Previous studies also discovered that pseudophosphorylated TAU inhibits the ability of the normal TAU to promote microtubule. In this experiment we work with transgenic mice, which we first examined to check if they contain TRE- Pathological Human Tau or tTa. Then we will mate them. Once mated, studies will be conducted to observe behavioral effects of TAU phosphorylation.

Treatments such as Donepezil mostly aim to alleviate the symptoms. But by investigating the effects of phosphorylation of TAU, it may lead to new treatment that will aim to prevent or reduce the chances of an individual having Alzheimer's disease.

1P-223

### **PAPER # 56**

#### **Are Social Work Academics Social Workers?: "It's My Professional Identity" versus "It's a Handicap"**

Virgil Hayes

Faculty Mentor: Professor Barbra Teater  
Department of Social Work

The presentation reports on the results from a study that analyzed qualitative data from 18 individual interviews with social work academics and one joint interview with two social work academics to answer the following research questions: (1) To what extent do social work academics identify as a social worker?; and (2) What importance do social work academics place on holding a PhD or Doctorate? By using thematic analysis (Braun & Clarke, 2006) to analyze the data, the researcher and I have been able to categorize the answers of 20 participants who were asked to place a value on the PhD or doctorate that they hold, as well as their social work identities.

Preliminary analysis indicates that there are four broad themes in relation to the importance the academic places on having a PhD or Doctorate, which included: (1) Skill set; (2) Flexibility; .... In relation to identification as a social worker, the preliminary analysis indicates identification takes place along a spectrum from "zero" identity or "it's a handicap" to "absolute identity" or "It's my identity." This presentation will report on the final analysis and themes that emerged in terms of identification as a social work and importance in having a PhD or Doctorate. Comparing data while placing the responses into categories or themes has allowed us to dismantle society's view of the social work profession as merely an extension of various institutions.

During the presentation, I will compare the response of the 20 participants with an excerpt from literature written in 1915 by Abraham Flexner to explore whether the previously mentioned view of the social work profession has changed and how societal expectations of academics and the social work profession has potentially influenced social work academics' identity.



**PAPER # 135****The Cost of the U.S. Healthcare System**

Kellie Joseph (The Verrazano School)

Faculty Mentor: Professor Ananya Mukherjee  
Department of Sociology and Anthropology

This paper aims to investigate the healthcare system of the United States.

Specifically, the effect of socioeconomic status (SES) on health and the treatment a patient receives. The United States has one of the most expensive health care systems in the world yet, it has high rates of chronic diseases (i.e. type 2 diabetes, and hypertension). By looking at income levels and social stratification, a converging relationship between SES and health exist. From a conflict theory perspective, people with higher incomes will have access to healthier food options, better health overall and treatment. In contrast, people of color and those with lower incomes will have access to cheap, processed food, the prevalence of chronic diseases will be higher and treatment will be inferior. A literature review was conducted across disciplines such as: sociology, public health, and economics. Together, these findings suggest new public policy should be created for the health care system in the United States to take a more preventative approach.

**PAPER # 197****The “Good” German Archetype in Visual Portrayals of the Holocaust**

Rachel Smalle (Macaulay Honors College)

Faculty Mentor: Professor Mark Lewis  
Department of History

Since the end of the Second World War, Germany has gone through many phases in the process of *Vergangenheitsbewältigung*, or coming to terms with the past. Indeed, the evolution of memorialization in both East and West Germany reveals a collection of narratives concerning the Holocaust and the role of “normal” Germans in it that are highly influenced by their time and place. Films, as an example of memorialization, are one lens through which these various narratives can be seen. Films made in Germany since the 1940s usually contain the “good” German archetype, a positive, relatable character who works to stand in for the intended German audience members themselves. This character reflects the memorialization of the director’s time and is influenced by the current events surrounding it. As a result, the “good” German character often acts to further the narrative of the time and place the film is made, by *performing* a narrative (i.e. depicting Jews and Germans as equal victims, etc). This is clear in the evolution of the communist hero in East Germany, the silence in postwar West German films, rebellious West German films of the 1960s and ‘70s, films made after the popular US miniseries, *Holocaust*, premiered in Germany, and the more recent German Heritage films. Even this character’s absence can be ascribed to events and memorialization of the time. An examination of this archetype from the end of the Second World War until the present, contextualized within larger narratives and historical events in Germany, reveals that Germans were increasingly willing to engage honestly with their past, but also tried to reimagine it. In some ways, such as in educating its youth and commemorating victims, Germany has been actively working towards confronting the Holocaust. However, throughout the decades and into even today, there have also been many efforts to rewrite history in a more positive light, and the “good” German archetype has been a key conduit in these attempts.

### **PAPER # 126**

## **Beyond the ADA: Moving toward a Modern Inclusive Campus Group**

Nicolette Varvaro

Faculty Mentor: Professor Barbra Teater  
Department of Social Work

As a disabled CSI student, I experience firsthand the struggle of limited accessibility. This study is committed to letting students with disabilities at CSI have a voice that promotes change in terms of enhanced accessibility beyond the American with Disabilities Act (ADA). CSI's advancements in accessibility will have a great impact on the lives of those with disabilities. This research aimed to improve the accessibility of the CSI campus based on the needs, and experiences of those the changes affect.

To understand, specifically, the aspects of the campus that need changing a sample of participants were brought together. The sample consisted of a number of disabled adults whom were enrolled as students at CSI. They were asked to complete a survey, regarding the accessibility of the CSI campus.

After rating specific areas of campus based on accessibility, each participant provided personal experiences and opinions on the matter. A sample of accessibility offices from Universities across the United States considered "model accessible campuses" were also asked to fill out a separate but similar survey. This survey provided information regarding the accessibility of different areas of each model campus. Mean scores and suggestions on how CSI could improve its accessibility were derived from the analysis of these surveys. Photos were also collected and analyzed from CSI's campus. The study culminated in a final presentation to faculty and staff at CSI, which will be shared at the conference.

# Research Poster Presentations

Center for the Arts

Atrium

2:15pm - 4:15pm

### Poster Location by Department

Accounting and Finance .....	West Lounge
Biology/Neuroscience .....	Bottom Front
Chemistry .....	East Lounge
Computer Science .....	Bottom Front
Curriculum and Instruction .....	Upstairs Walkway
Educational Studies .....	Upstairs Walkway
Engineering Science and Physics .....	Bottom Front
English/Linguistics .....	Upstairs Walkway
Management .....	West Lounge
Marketing .....	West Lounge
Mathematics .....	Bottom Front
Media Culture .....	East Lounge
Nursing .....	West Lounge
Office of Technology Systems .....	Bottom Front
Performing and Creative Arts .....	East Lounge
Physical Therapy .....	West Lounge
Political Science and Global Affairs .....	Upstairs Walkway
Psychology.....	Bottom Center/Back
Social Work .....	Upstairs Walkway
Sociology and Anthropology.....	Upstairs Walkway
World Languages and Literatures.....	Upstairs Walkway

## DEPARTMENT OF ACCOUNTING AND FINANCE

CONFERENCE LOCATION: WEST LOUNGE

### POSTER # 187

#### Forensic Accounting

Michael Adamo (The Verrazano School)

Faculty Mentor: Professor Deborah Brickman  
Department of Accounting and Finance

Forensic accounting has been in the limelight for the past ten to fifteen years. However, what exactly is forensic accounting? According to [forensicaccounting.com](http://forensicaccounting.com), it provides an accounting analysis which forms the basis for discussion, debate and ultimately dispute resolution and detection of fraud. It utilizes accounting and auditing skills when conducting an investigation. Forensic accountants assess and measure losses or other forms of damage to an organization and recommend corrective action.

Why is forensic accounting needed? Between the years 2000 and 2002, as a result of forensic accounting procedures, fraudulent activities were discovered in some of the largest companies in the United States (Enron, Tyco, Worldcom). These fraudulent activities involved falsifying financial statements, overstating expense accounts and stock fraud. In response to these fraudulent activities, the Sarbanes-Oxley Act (SOX) was implemented. This act holds companies accountable for their financial statements. This paper will research and present the techniques and applications of forensic accounting in specific situations and cases and demonstrate how these techniques aid in fraud investigation.

### POSTER # 174

#### The Comparison of U.S. and China in Financial Field

Meng Dong

Faculty Mentor: Professor George Wang  
Department of Accounting and Finance

The research topic I may select could be a comparative analysis on industry of business social network in the US and China. The content could include (for both countries):

- (1) Basic statistics: such as number of platforms, types of platforms, size of their businesses, geographical locations, financials, etc.
- (2) Business model: how they make money (income sources), what are the risks, and how they control the risks
- (3) Comparing the platforms in US and China: what are the similarities, what are differences, and why?
- (4) My expectations about their future development.
- (5) List all the sources of my info

### POSTER # 139

#### **Which Type of Economic Freedom Has The Strongest Correlation to National Wealth?**

John Garigiano (The Verrazano School)

Faculty Mentor: Professor Paul Orzechowski  
Department of Accounting and Finance

The purpose of this study is to identify which type of economic freedom has the strongest correlation to a nation's wealth. There are ten types of economic freedoms including fiscal freedom, trade freedom, and monetary freedom. The Heritage Foundation has rated each nation in the ten economic freedom categories. I will compare the GDP per capita and overall GDP to each nation's rating in each economic freedom category. As a result, I will end up with ten different graphs that show the correlation between the GDP of each country and the ratings for a particular type of economic freedom.

For instance, I will have a graph showing the correlation between the GDP of

137 countries and average monetary freedom rating of 137 countries. The goal is to determine which graph has the strongest correlation coefficient and ultimately which type of freedom has the strongest correlation to national wealth. If there is a strong correlation between a specific type of economic freedom and national wealth, policymakers will have new information about favorable policies. For instance, if there is a strong correlation between fiscal freedom and wealth, it may be useful to decrease taxation. I'm also interested in identifying any negative correlations between a specific type of freedom and national wealth. This will indicate that perhaps the government should intervene in a particular aspect of the economy. The goal is to identify relationships between degrees of economic freedom and economic prosperity or economic stagnation.

### POSTER # 203

#### **Geospatial Analysis of New For-hire Vehicles Services in NYC**

Timothy Sweeney

Faculty Mentor: Professor Jonathan Peters  
Department of Accounting and Finance

I will study the various aspects of the for-hire vehicle marketplace in the New York Metro region. Given the strong interest in ridesharing application and new alternative methods of travel (Lyft, Uber, Bikeshare, Carshare and such), the growth and operational practices of these services are of significant interest to policy makers and regional planners. The recent conflicts over the impact of new ridesharing and for-hire ride services and their impact on regional transportation, finance, and traffic and congestion require further analysis. I look to explore the reported large data sets that have been collected by the New York City Taxi and Limousine Commission on car service and network cars. I will also look at traditional yellow taxis and new green taxi services and analyze their operational practices, service areas, and social impacts of the various providers.

**POSTER # 82**

**Interning for NYC's CFO:  
Experiential Learning at the  
NYC Comptroller's Office**

Rachel Torres (The Verrazano School)

Faculty Mentor: Professor Patricia Galletta  
Department of Accounting and Finance

This project is about the experiential learning I gained interning at the New York City Comptroller's Office from June 2015 – August 2015. The New York City Comptroller is an independently elected official who serves as the Chief Financial Officer of the City of New York. The mission of the office is to ensure the financial health of New York City by advising the Mayor, the City Council, and the public of the City's financial condition.

Every summer they have a highly competitive Summer Internship program. The Summer Internship program is a nine-week program that reflects the Comptroller's Office commitment to provide a range of learning and work opportunities to students with an interest in public service and city government.

I was one of 50 New York City college students that were chosen to participate in the Summer Internship program. I was proud to be the only student from the College of Staten Island that was chosen to participate. I was assigned to the Bureau of Accountancy as an Accounting Associate for 9 weeks during Summer 2015. In particular, I speak about the Comptroller's Office, what I learned, the experience I gained, the skills I gained from the academic courses I took that helped me, and a journal of my experience in this project.

**POSTER # 172**

**Marriage and Income Tax**

Alima Toure

Faculty Mentor: Professor Max Gottlieb  
Department of Accounting and Finance

A "marriage penalty" occurs in the tax system when a wife and husband pay more income tax filing jointly as a couple than they would if they had remained single and filed as individuals. Conversely, a "marriage bonus" occurs if a couple pays less tax filing jointly than they would if they were not married and filed singly. My research will consist of finding how can marital status affect someone federal income tax.

First of all, we are going to analyze the progressive tax rate.

Marriage penalties and bonuses result from the combination of progressive tax rates and taxation of a married couple as a single tax unit. With progressive taxes (which impose higher rates on higher incomes), combining spouses' incomes can result in some income incurring higher rates than if incomes were taxed separately, but only if joint tax brackets are less than twice as wide as individual brackets. The second aspect is government benefits. Married couples often receive lower benefits from government programs than they would if they were not married. Lastly we are going to see what are some tax advantages for married couple known as "marriage bonus".

### **POSTER # 148**

#### **The Advancement of Accounting Information Systems: An Analysis of Today's Software**

Kelly Walsh (The Verrazano School)

Faculty Mentor: Professor Patricia Galletta  
Department of Accounting and Finance

In the modern world, accounting information systems have to keep up with the rapid advancement in technology. Companies have to stay up to date by updating their systems with new software periodically. With so much information within a company, having software that can collect, store, and export data properly is extremely important. Microsoft Dynamics GP and QuickBooks are software used by many companies to fulfill that duty. Thus, this paper analyzes the benefits and problems of these specific software's.

QuickBooks and GP are amongst the top five most popular accounting software used in companies (Capterra 2014). QuickBooks, however, is usually linked to smaller businesses while Microsoft Dynamics GP is considered more useful to medium sized companies. What separates the two if they both collect, store, and export data? Drawing from personal experience, statistical data, and reviews in accounting literature, we see what factors make one of these software systems preferable to the other. With today's technology moving towards wireless and the "cloud," software has an even higher standard to contest with. Luckily, new updates have pushed these software's to take their businesses to that next level of technology putting them in even more competition with each other. These two competing software both provide many of the same function. However, this analysis illustrates the numerous subtle differences that can be essential to businesses in making decisions.

### **DEPARTMENT OF BIOLOGY/NEUROSCIENCE**

CONFERENCE LOCATION: BOTTOM FRONT

### **POSTER # 96**

#### **Environmental Toxins in the Etiology of Autism**

Cynthia Odili Actie

Faculty Mentor: Professor Abdeslem El Idrissi  
Department of Biology

The etiology of autism is thought to involve the complex interplay among genetic and environmental factors. Patterns of inheritance suggests an epigenetic component to the development of autism. A variety of environmental risk factors are known to induce epigenetic changes in DNA, including those in autism - associated genes (AAG). Dibutyl Phthalate (DBP) is a developmental and reproductive toxin that causes a broad range of birth defects resulting in neurological impairments. Our preliminary data suggest that gestational exposure to low dose of DBP causes gender-specific neurobehavioral abnormalities in the offspring consistent with the autism spectrum disorder. These neurobehavioral alternations elicited by DBP are consistent with altered inhibitory (GABA) function in the brain. We hypothesize that gestational exposure to DBP alters the maturation of the inhibitory system which leads to a developmental delay observed in these mice. Consistent with this, we found that the  $\gamma$ 3 subunit of the GABA<sub>A</sub> receptor is significantly down-regulated. Furthermore, the P450 and StAR were also down-regulated by gestational exposure to DBP. These proteins are critically important for neuro-steroid biosynthesis. These data implicate neuro-endocrine alterations in the etiology of autism. Interestingly, when we used the fragile x mouse model (Fmr1 ko), we found that all DBP-induced phenotypes were reproducible and exaggerated. Since Fmr1 ko mice have diminished GABAergic function, show abnormal expression of many genes implicated in the etiology of autism, and show many of DBP-induced behaviors (e.g. heightened anxiety, altered sociability and decreased spatial learning). This further confirms the strong link between genetic makeup and the susceptibility to environmental risk factors.



**POSTER # 201**

**Spinal Sciatic Direct Current Stimulation Normalizes Muscle Tone in Spinal Cord Injured Animals with Spasticity**

Malik Ahmed (The Verrazano School)

Faculty Mentor: Professor Zaghloul Ahmed  
Department of Biology

Spasticity negatively influences quality of life. It causes pain and fatigue, disturbs sleep, restricts daily activities like walking, sitting, and bathing, and can complicate rehabilitation efforts. Management of muscle tone abnormalities is a serious challenge that is sometimes insurmountable. Thus, investigations designed to develop novel therapeutic interventions, such as those described in this proposal, have very high potential significance. This application aims to investigate effects of a new method that utilizes subthreshold direct current stimulation (DCS) to attenuate abnormal muscle tone in mice with spinal cord injury (SCI). We are performing parametric studies including combination with other stimulation strategies, to optimize the effects of DCS. Our preliminary data are the first to show that applying spinal-to-sciatic direct current stimulation can decrease or increase steady or transit stretch responses (depending on the direction of the current) in anesthetized SCI mice. This proposal aims to further investigate spinal-to-sciatic DCS in anesthetized and awake animals, which is to test 1) long-term effects of longer duration spinal-to-sciatic DCS on muscle tone and cortical outputs in anesthetized SCI animals, 2) short-term effects of spino-sciatic DCS in awake animals with spasticity following contusive SCI and 3) long-term effects of repetitive spinal-sciatic DCS on spasticity and recovery of skilled locomotion in animals with SCI. We have developed a testing system that can reliably measure spasticity, defined as velocity-dependent increase in muscle tone, in anesthetized mice, and we will use this proposal to adapt the system to measure spasticity in awake animals. This approach is expected to permanently attenuate spasticity and improve recovery of skilled locomotion after SCI. The overarching goal is to demonstrate proof of concept, which will provide the basis to translate the proposed approach to humans to manage spasticity or restore normal muscle tone.

**POSTER # 103**

**The Effects of Polyphenols Such as Resveratrol and Pterostilbene on Cervical Cancer Cells**

Dina AlSharif (The Verrazano School),  
Mohamed Al Sharif

Faculty Mentor: Professor Jimmie Fata  
Department of Biology

Cervical cancer is one of the most common cancers affecting women worldwide.

It is the fourth most common cancer in the world and a great risk in developing countries. Infection with Human papilloma virus (HPV-18) causes cervical cancer. Prolonged exposure to infection with HPV leads to the progression of cervical lesions into a cancerous state. Polyphenols, which are a group of antioxidants, have profound health promoting effects and have gained much importance as anti-cancerous agents. The current study focuses inhibitory effects of two such polyphenols, Resveratrol and Pterostilbene, on cervical cancer cells. Resveratrol has been widely studied in several types of cancers and has been proven to have several targets that inhibit cancer progression.

Initial studies carried out in the lab using cell viability assays on HeLa cell line (HPV 18) showed that the inhibitory concentration (IC50) of Pterostilbene is much lower than resveratrol, thus showing that Pterostilbene is more cytotoxic to HeLa cells in comparison with resveratrol. My research goal is to study the effects of these two drugs on different cervical cancer cell lines. An Immunohistochemistry for p53 will be performed to analyze the mechanistic pathway of the drug. Using different concentrations of Resveratrol and Pterostilbene, I will study and observe the change in the expression level of p53.

In addition, Infections with human papillomaviruses (HPV-16) can also cause human cervical cancer. SiHa cell line will be used to investigate the competence of both Resveratrol and Pterostilbene. Based on previous studies with HeLa cells, showing the effect of both Resveratrol and Pterostilbene in triggering cell apoptosis in a time and dose dependent manner, we hypothesize that cell apoptosis on SiHa cell line will be induced by the treatment of both drugs.

### POSTER # 83

#### **RC Cells in Atlantic Silverside**

Kirill Antonov (The Verrazano School)

Faculty Mentor: Professor Charles Kramer  
Department of Biology

Rodlet cells (RCs) are widely distributed within the tissues of both saltwater and freshwater fishes. Although the structure of these cells has been fully elucidated, their function still poses a conundrum ever since their discovery over a century ago. These cells are round to oval in shape with a thick fibrillar capsule, a basally located nucleus and the presence of conspicuous rodlets within their cytoplasm. The latter attributing to the cell's name. Although several functions have been assigned to the RCs over the years, most recent studies suggest that they play a role in the fish's innate immune response, primarily as effector cells mobilized by environmental stressors, toxins, parasite infestation and bacterial infection.

The Atlantic Silverside, *Menidia menidia* is highly sensitive to environmental changes and is freely available which makes this fish a good species to study RC activity. In this investigation, *M. menidia* were collected during the summer of 2014 from the water of Princes Bay, Staten Island and less contaminated sites located at Marine Park and Point Breeze, Brooklyn. The gills, heart, gut and gonads were removed and compared both within and between populations using standard paraffin-processed and SEM procedures. On the histological level, we found a hepatopancreas which heretofore has not been described for this species, as well as, rodlets cells in the gills, liver and presumptive RCs in the heart. At the SEM level, we found mysterious perforations on the inward portion of hemibranch of the gills and cells resembling rodlet cells in structure. Parasites were not observed in Atlantic Silverside. In our

on-going investigation, we will compare morphological features of *Menidia menidia* and *Fundulus heteroclitus* as they relate to RC distribution and activity.

### POSTER # 142

#### **Cis-regulatory Analysis of Histone Variant H2A.Z during the Development of the Sea Urchin *Strongylocentrotus Purpuratus***

Jasmine Calle (Macaulay Honors College), Justin Gurses, Aminat Haruna, Victor Ramirez, Winnie Darius, Andrea Puno (The Verrazano School)

Faculty Mentor: Professor Cesar Arenas-Mena  
Department of Biology

The goal of the project is to test the spatial and temporal distribution of cellular multipotency during sea urchin development. Multipotency is the ability of cells to differentiate into other cell types and this ability declines during developmental progression. We are testing multipotency by reprogramming cells with different fates into skeletogenic mesenchyme cells, one of the embryonic territories that make up the sea urchin larva.

Reprogramming will be accomplished by ectopically expressing the skeletogenic transcription factor Pmar1 in cells other than the skeletogenic mesenchyme.

Pmar1 is a transcription factor known to induce skeletogenic mesenchyme specification during embryogenesis, and we have elaborated an inducible system to gain control of its ectopic expression. Two constructs have been made, one that drives the expression of Dox-inducible Tet-3G transcription factor everywhere except the skeletogenic mesenchyme, and another driving the simultaneous expression of fluorescent marker in mCherry and Pmar1 under the control of tet3G-Dox. Both constructs will be injected into embryos together with differentiation reporter construct SM50-GFP that will indicate successful reprogramming into skeletogenic mesenchyme. We expect to observe a decline in the reprogramming potential during developmental progression. We currently are optimizing the inducible system to get the desired concentration optimal for normal development.

**POSTER # 66**

**Morphological Comparison of Freshwater Invertebrates along an Urbanization Mosaic on Staten Island**

Peter Cruciata (Macaulay Honors College)  
Faculty Mentor: Professor Eugenia Naro-Maciel  
Department of Biology

Comparing organismal profiles between sites is an informative method for learning about ecosystems. High species richness, for example, may indicate a healthy environment where there is a large amount of food sources. My project focuses on various freshwater organisms, such as hemipterans and dipterans, found in Freshkills Park and other parks along an urbanization mosaic on Staten Island in an effort to compare the species between the parks and the previous landfill. An important feature that will be described here is ecological succession. I hypothesize that one pond may have more diversity than another because one has had more time to develop a more diverse habitat, whereas a younger pond would have less time to develop tree cover, for example. All of the organisms in this study were identified morphologically with the use of dichotomous keys. In my work in Professor Naro-Maciel's lab over the past two semesters, I have added to an already abundant list of organisms found at six ponds on Staten Island: Sharrotts Pond, Walker Pond, Long Pond, and three ponds within Freshkills Park.

Through graphical, morphological, and literary analysis, I plan to provide information as to the diversity of the ponds. Once a thorough analysis of the invertebrates from the ponds is complete, I intend to suggest why one pond may favor some species over the others and why there may be higher species richness in some ponds more than others. The results, so far, show that many of the ponds share similar species, such as freshwater snails, but this similarity is less so for certain ponds in Freshkills Park. My discussion will analyze these differences and how they may be due to the Park's history or possibly due to the younger age of some ponds.

**POSTER # 33**

**The Engineering of Truncated INO80 Protein Yeast Mutants to Identify Acetylated Lysine Residues**

Jaclyn DiBello (Macaulay Honors College),  
Fina Vitale (Macaulay Honors College)  
Faculty Mentor: Professor Chang-Hui Shen  
Department of Biology

Normally, DNA is wrapped tightly around histone proteins within the nuclei of cells, this allows condensation of the large strands to fit within a small volume. The strong bond is due to polarity. DNA holds a negative charge, whereas histones hold positive. Histones also have lysine residues on their tails. Acetylation involves adding an acetyl group to the lysine rich tails of the positively charged histone, ultimately neutralizing it, and loosening the DNA wrapped around its surface. This loosening allows the DNA to be more exposed, and interact more readily with other substances such as transcription factors for the activation of genes. Past studies have proven that protein INO80 has played a role in the activation of the INO1 gene through acetylation.

My goal for this experiment is to identify the segment of the INO80 protein responsible for acetylation. To do so, I plan to cut out portions of the protein, and then test for acetylation. First, I will use mini-prep and phenol-chloroform extraction techniques to open cells and expose their DNA.

I will then conduct digestion and restriction to cut out certain segments of the INO80 protein, then re-ligation to reattach the protein pieces without those chosen segments. The product will be mutant INO80 proteins, which will be inserted into E-coli cells for growth and replication, and then inserted into yeast cells. These cells will be used for Western Blot testing, which will indicate if acetylation of the INO1 gene has occurred.

If acetylation did occur, that indicates that the segment of the INO80 protein responsible for acetylation (our target) is present in the mutant protein and was not removed via restriction and digestion. If Western Blot reveals that acetylation of INO1 genes did not occur, that indicates that the segment of the INO80 protein responsible for acetylation was successfully removed during restriction and digestion.

### **POSTER # 152**

#### **Effect of DBP on Steroid Biosynthesis**

Noorhan Elhaddad (The Verrazano School)

Faculty Mentor: Professor Abdeslem El Idrissi  
Department of Biology

Our preliminary data suggests that gestational exposure to low doses of DBP causes gender-specific neurobehavioral abnormalities in the offspring. Adult mice injected with DBP showed major neurobehavioral alterations characterized by increased locomotor activity and anxiety. To determine the effects of DBP on early brain development, we injected pregnant mice with DBP on gestational day 10 and assessed the neurobehavioral effects in the offspring. Interestingly, the neurobehavioral phenotype elicited by a single injection of adult mice could be reproduced in the offspring of DBP-injected pregnant mice. Moreover, these mice showed heightened fear-potentiated freezing responses, reduced socialization and a great decrease in learning as measured by the acquisition and retention of a passive avoidance task. Male offspring were more affected than female offspring. Neurobehavioral effects drawn by the exposure to DBP are consistent with altered inhibitory function in the brain of these mice.

### **POSTER # 1**

#### **Role of Insulin-like Growth Factor Signaling in Fragile X Syndrome**

Mardia Fahnbuleh

Faculty Mentor: Professor Abdeslem El Idrissi  
Department of Biology

We are studying the role of insulin-like growth factor signaling in Fragile X Syndrome (FXS). FXS is a form of inherited intellectual disability caused by expansion of a triplet CGG repeat in the fragile X mental retardation-1 (FMR1) gene on the X chromosome. FXS is dominant in males, but females can also have this disease. Some symptoms of FXS include hyperactivity, susceptibility to seizures, learning disability, speech delays and enlarged testicles. Because insulin-like growth factor (Igf) signaling is known to play a role in neuron function and testis development, we hypothesize that changes in Igf signaling will affect the phenotypes of Fmr1 knockout (KO) mice. To test this hypothesis we will reduce the levels of the insulin-like growth factor receptor (Igf1r) in male Fmr1 KO mice by introducing an Igf1r KO mutation into the mice. We will then determine the effect of the Igf1r KO mutation on the enlarged testis phenotype, the nest building ability, and the obsessive behavior phenotype of the Fmr1 KO mice using the marble burying test. Lastly, we will be examining the activity of genes in signaling pathways that are known to be affected in Fmr1 KO mice.

**POSTER # 52**

**The Anti-inflammatory and Antioxidant Properties of Rosemary**

Alexis Gorin

Faculty Mentor: Professor Abdeslem El Idrissi  
Department of Biology

*Rosmarinus officinalis*, known as Rosemary, has been used throughout history for its aromatic and medicinal properties. Rosemary has been shown to have anti-cancer, anti-microbial, antioxidant, anti-allergenic, anti-inflammatory, and neuro-protective properties. However, this experiment will focus on its anti-inflammatory and antioxidant effects in particular.

According to the National Center of Chronic Disease Prevention and Health Promotion, it is currently estimated that about 1-1.3 million people suffer from inflammatory bowel disease (IBD). Oxidative-stress has been associated with many diseases including liver and heart diseases as well as some cancers. Firstly, GC/MS was performed on Rosemary oil extracted through distillation to obtain a qualitative analysis of the essential oil.

Alongside this, solute extraction of Rosemary was conducted and used to test antioxidant and anti-inflammatory properties of the Rosemary extract. Our results show that the anti-inflammatory properties in the essential oil extracted from Rosemary are mild at best. Pertaining to the antioxidant effects of the Rosemary leaf extract, results of spectrophotometry show that it can be used as an antioxidant agent, showing more effective results than a common commercial antioxidant product, Butylated hydroxytoluene (BHT).

**POSTER # 105**

**Developmental Reprogramming Potential in Sea Urchin Embryos**

Aminat Haruna

Faculty Mentor: Professor Cesar Arenas-Mena  
Department of Biology

The goal of the project is to test the spatial and temporal distribution of cellular multipotency during sea urchin development. Multipotency is the ability of cells to differentiate into other cell types and this ability declines during developmental progression. We are testing multipotency by reprogramming cells with different fates into skeletogenic mesenchyme cells, one of the embryonic territories that make up the sea urchin larva.

Reprogramming will be accomplished by ectopically expressing the skeletogenic transcription factor *Pmar1* in cells other than the skeletogenic mesenchyme.

*Pmar1* is a transcription factor known to induce skeletogenic mesenchyme specification during embryogenesis, and we have elaborated an inducible system to gain control of its ectopic expression. Two constructs have been made, one that drives the expression of Dox-inducible Tet-3G transcription factor everywhere except the skeletogenic mesenchyme, and another driving the simultaneous expression of fluorescent marker in mCherry and *Pmar1* under the control of tet3G-Dox. Both constructs will be injected into embryos together with differentiation reporter construct SM50-GFP that will indicate successful reprogramming into skeletogenic mesenchyme. We expect to observe a decline in the reprogramming potential during developmental progression. We currently are optimizing the inducible system to get the desired concentration optimal for normal development.

### **POSTER # 72**

#### **Identifying Drug Targets to Enable Microglial Phagocytosis of GBM**

Monnique Johnson (Macaulay Honors College), Norhan Sobhi (The Verrazano School)

Faculty Mentor: Professor Nancy Liu-Sullivan  
Department of Biology

Glioblastomas multiforme (GBM) is the most aggressive brain tumor with low survival rate and no effective treatment strategies. A key problem of the aggressive nature of GBM is that it compromises phagocytic cells in their capacity to clear up cancer cells. Microglial cells are the brain-specific phagocytes and have been shown to be incapable of clearing up GBM cells and on the contrary enabling GBM in growth and migration. Cytokines are a family of molecules regulating crosstalk between tumor cells and neighboring cells including microglial cells. Interestingly, antibiotics have been shown to influence cytokines in production, expression, and activities. The goal of my research as part of the larger GBM project in the lab is to assemble a focused library of FDA-approved antibiotics which the lab can use to screen for novel targets with the goal of reversing the non-functional microglial cells into GBM-clearing phagocytes.

### **POSTER # 198**

#### **Effect of DBP on Neurosteroids Biosynthesis**

Shahrukh Khan (The Verrazano School), Noorhan Elhaddad (The Verrazano School)

Faculty Mentor: Professor Abdeslem El Idrissi  
Department of Biology

It is well established that the etiology of autism consists of genetic and environmental factors that suggest an epigenetic component to the development of autism. A variety of environmental agents are thought to induce epigenetic changes in DNA, including those in autism-associated genes. However, there isn't enough research on the effect plastic by-products like Dibutyl Phthalate (DBP) have during gestation. Although the effects of DBP as an endocrine disruptor are well established, there is limited research that addresses the effects of low levels of DBP. Therefore, for this research study, we investigated the neurotoxic effects of DBP during gestational exposure in mice offspring.

Our preliminary data suggest that gestational exposure to low doses of DBP causes male-specific neurobehavioral abnormalities in the offspring, which may be mediated by the altered maturation of neuronal circuits associated with these behaviors. Adult male mice (2 months old) injected with DBP (1 mg/kg i.p) showed significant neurobehavioral alterations characterized by increased locomotor activity and anxiety measured in the open field and elevated plus maze respectively. To determine the effects of DBP on early brain development, we injected pregnant mice with DBP (1 mg/kg s.c) on gestational day 10 and assessed the neurobehavioral effects in the offspring when they reached 2 months of age. During early development, the activation of GABAA receptors is critically important for the maturation of neuronal networks. The outcome of this proposal will allow for an elucidation of the molecular, biochemical, electrophysiological and endocrine effects of DBP that lead to the neurobehavioral alterations observed with gestational exposure to DBP.

**POSTER # 188**

**The Effect of Trans-spinal Direct Current Stimulation on a Neural Stem Cell**

Dhana Kindelpitiya, Yohanna Quezada

Faculty Mentor: Professor Zaghloul Ahmed  
Department of Biology

One central question as to whether non-invasive applied direct current can be used to control cell behaviour in vivo? Applied DC is coupled with an electrical field (EF) gradient within the target tissue. EF exerts vectorial forces on endogenous charged molecules and ions. Forces imposed by applied EF causes directional movements of charged particles; see a review by McCaig et al (2005), hence can modify local environment of biological tissues.

Therefore, applied EF could influence movements of migratory cells such as adult born neural cells. In vitro experiments showed that applied EF can influence neural cell migration. However, there are no in vivo experiments to show the effects of applied direct current on adult born neural cells.

Adult stem cells exist in the spinal cord. These cells have been shown to be able to divide and migrate within the spinal cord. Our previous studies have shown that the effects of trans-spinal direct current stimulation on the number and distribution of BrdU labelled neural cells in intact adult mouse spinal cord. In the current study we will investigate safe limits of electrical stimulation of cells. Furthermore, we will study the microglia in the stimulated and the spinal cord injured mouse.

**POSTER # 131**

**Bioactive Constituents from a Traditional Chinese Plant Species *Garcinia Oblongifolia* against Estrogen Receptor Positive Breast Cancer**

Justine Kwok

Faculty Mentor: Professor Jimmie Fata  
Department of Biology

*Garcinia oblongifolia* is a well-known medicinal plant from southern China, with edible fruits. However, the phytochemistry and bioactivity of the vegetative organs of *G. oblongifolia* are not well understood. Herein we investigate the bioactivities of leaf, branch, and fruits of *G. oblongifolia* while simultaneously using analytical chemistry techniques to gain further insights into the active constituents. In vitro effects of crude extracts on human breast cancer cell MCF-7 were studied using live cell imaging and cytotoxicity assays. Antioxidant potential of the extracts were tested using ABTS and DPPH assays. Our results indicate that the branch extract (500 µg/ml) was the most potent followed by the leaf extract (1000 µg/ml).

Prominent vacuolization and cytotoxicity was observed only with the branch and leaf extracts at the concentrations mentioned above after an exposure time of 24 hours. These observations were further verified using analytical techniques, (UPLC-QTOF-MS combined with heat map analyses), in which the branch and leaf extracts showed presence of xanthenes and bioflavonoids in higher concentrations in addition to bioactive benzophenones. Thus the use of metabolic profiling to prioritize bioactive constituents along with suitable in vitro studies, proves to be a useful strategy to harness the potential of endangered medicinal plant species, with the use of minimal quantity of plant material.

### POSTER # 89

#### **Integration of Transcriptomic and Genomic Analysis to Understand Differential Gene Expression Patterns in Vibrios**

Rin Zhi Larocque (The Verrazano School)

Faculty Mentor: Professor Jianying Gu  
Department of Biology

In the previous study, a core genome comprised 1,882 orthologous genes were identified among eleven Vibrionaceae genomes. To achieve a better understanding of interplays between gene components, cellular networks and phenotypes, we proposed to interrogate and integrate genomic, and transcriptomic data into a systems framework. In this proposed study, we tried to address the following questions by analyze the gene expression pattern under the different experiment conditions in the content of Vibrio core genome and pan-genome, and particularly in the LSE gene families: (1) Do the gene expression profiles in core genome different from that in pan-genome? (2) Do the gene expression profiles vary among member genes in the LSE gene family? If so, are there any detectable trends? (3) Are these gene expression pattern variations correlated with the varying phenotypes, such as life style transition (from water to host), or varying levels of virulence? To identify the core genome and pan-genome of Vibrio, A Markov cluster algorithm, OrthoMCL, has been employed to scan the completed genomes of Vibrio species / strains and to identify orthologs and paralogs, in combination with an exhaustive all-to-all BLASTP searches across taxa. The program carries out an all-against-all blastp search and uses the best hits to build a list of orthologs. The orthologs are clustered using the Markov Cluster algorithm based on a matrix of corrected P-values. A hierarchical functional classification was performed for each Vibrio sequence by searching against the Clusters of Orthologous Groups (COG) database.

Statistical analysis of transcriptomic data was conducted using R.

### POSTER # 125

#### **Free Radicals - Their Effects upon the Human Body, and Countermeasures That Can Be Taken to Combat Them**

Michael Maisano (The Verrazano School)

Faculty Mentor: Professor Shaibal Mitra  
Department of Biology

Free radicals are defined as a singular atom or group of atoms derived from the interaction of oxygen and other molecules which contain one or more unpaired electrons. These unpaired electrons not only result in the modification of the structure of the atom(s), but also substantially increases it's level of chemical reactivity by way of altering its charge.

From the moment of formation, free radicals are dangerously reactive and seek only to discharge it's extra electron(s) or rip away an electron from a neighboring cell. The biological tendency of free radicals to perform these functions as a means to interfere with electrons from the normal functional cells of our bodies can inflict a great deal of damage upon targeted systems and cells of the body on both an intracellular and extracellular axis, and in the process of doing so, creates an atmosphere which is favorable for the formation of disease within the body. Free radicals are generated as byproducts of the regulated metabolic, catabolic and anabolic processes that take place within the cells of our body (cellular respiration, formation of proteins from ingested foods) and are also produced in response to external stimulants such as exposure to high concentrations of ultraviolet light from the sun.

The potential danger presented by the after effects of free radicals upon living cells is substantial, and is also applicative to all individuals. The hope is that this research will bring greater awareness to the public regarding the negative impacts of free radicals upon our bodies, and to use this understanding to both moderate and control their effects.



**POSTER # 80**

**The Marine Invertebrate Life of Great Kills**

Vincent Nicoletta (Macaulay Honors College)

Faculty Mentor: Professor William Wallace  
Department of Biology

The purpose of this independent study project was to create a catalog and identification key for marine invertebrates found in the Great Kills Park region of Staten Island, to be used by future students and the College.

Another purpose of this project was to investigate the distributions of marine invertebrate phyla in various areas of the region. This project was supervised and instructed by Professor William Wallace of the Biology Department here at the College of Staten Island.

The project began in the spring of 2015, during which samples were collected from several areas around Great Kills Park. These locations were: Great Kills Harbor, the beach, and a creek. At each location, samples were taken from different water levels; the water's surface, pelagic areas, and sediment. Once collected, specimens were then isolated from the collected samples. Using a camera and dissection microscope, photos were taken for later use. The photographs and specimens were later analyzed, and the specimens were identified. The identification process began with classifying the samples into the most inclusive level, phyla, to the least inclusive, genus and species. Using the gathered information, sources, and photographs, an identification key was made, which was added to Professor Wallace's website.

**POSTER # 86**

**Characterization of Adhesive Proteins in Immortalized Astrocytes**

Yan Mei Nie (The Verrazano School)

Faculty Mentor: Professor Greg Phillips  
Department of Biology

Astrocytes are the most abundant cells in the nervous system and are tightly coupled to neuronal and synaptic function. Astrocytes occupy distinct, non-overlapping territories in the central nervous system, an arrangement known as "astrocyte tiling". Disruption of this tiling can accompany traumatic, chemical, or excitatory injury to the brain and cause what is known as reactive gliosis, an abundance of overlapping astrocytes that form a glial "scar". This scar is prohibitive to neural regeneration.

Cell-cell interaction among astrocytes must be important for tiling but the specific adhesion receptors that mediate this are unknown. We are using immortalized mouse astrocytes to investigate the role of various cell-cell adhesion molecules in astrocyte tiling. We immunostained these cells with antibodies to the classical cadherin, N-cadherin, as well as to antibodies to the alpha and gamma clustered protocadherin families. Classical cadherins mediate very strong cell-cell interactions while clustered protocadherins mediate a very different form of cellular interaction that might actually be repulsive or anti-adhesive. Such anti-adhesive mechanisms are likely to be operative in astrocyte tiling. We found that N-cadherin was strongly associated with cell-cell junctions while gamma-protocadherins exhibited less junctional staining and more intracellular organelle labeling.

Alpha-protocadherin antibodies also labeled organelles and also very strongly the nucleus. We used shRNAs to knock down gamma-protocadherins and found a dramatic increase in N-cadherin expression with no change in alpha-protocadherin levels. We hypothesize that the dynamic balance of protocadherins and classical cadherins could underlie the mechanism of astrocyte tiling.

### POSTER # 117

#### **Analyzing Pond Biodiversity on Staten Island Using Next Generation and Traditional Methods**

Yan Mei Nie (The Verrazano School)

Faculty Mentor: Professor Eugenia Naro-Maciel

Department of Biology

Anthropogenic disturbances to the environment can severely impact the world we live in. To evaluate such effects in New York City, one of the world's greatest metropolises, ponds along an urbanization mosaic on Staten Island are being studied. The aim is to characterize the community composition of freshwater ponds using traditional and cutting-edge techniques in a comparative approach. Traditional techniques will include morphological identification of invertebrates, while next generation methods will include the use of Environmental DNA (eDNA), a non-invasive cutting-edge tool for taxon identification from viable samples such as soil and water that contain DNA. We hypothesize that the eDNA, DNA barcoding, and morphology will represent the community composition of the freshwater ponds. Samples of soil and water were collected from Staten Island ponds from the summers of 2014-2015. DNA from those environmental samples was extracted using MOBIO PowerWater Kits, and sent for professional sequencing. For comparison, with others I morphologically identified macroscopic invertebrates collected from ponds and carried out DNA barcoding of individual organisms for species identification. DNA barcoding involves extracting DNA using Qiagen kits and carrying out Polymerase Chain reactions (PCR), and sequencing reactions. The program Geneious will be used to edit the DNA sequences we will obtain. This research project will help confirm the identities of the organisms found using eDNA. Our results show that most of the organisms, from freshwater ponds of interest, which were morphologically identified matched the eDNA results from previous years.

### POSTER # 106

#### **Cellular Mechanism for Clustered Protocadherin Anti-adhesion in the Nervous System**

Penina Safier, Adam Shonubi

Faculty Mentor: Professor Greg Phillips

Department of Biology

The clustered protocadherins (Pcdhs) are related to the well-known classical cadherin family of cell adhesion molecules and are stochastically expressed in individual neurons, generating a distinct cell surface "code".

Through this code, Pcdhs are responsible for preventing the crossing of dendrites from the same neuron, a process termed "self-avoidance". How can apparent cell adhesion molecules mediate the avoidance of cellular membranes? Such a mechanism must involve initial membrane interaction followed by an active "anti-adhesive" process. We have speculated that anti-adhesion involves the down-regulation of pro-adhesive molecules by endocytosis after initial cell-cell binding. Consistent with this hypothesis, Pcdhs are prominently trafficked in the endolysosome system, much more so than conventional adhesion molecules. Our previous studies showed that a short transmembrane and cytoplasmic Pcdh stub, that mimics a cleavage product generated by matrix metalloproteinases (MMPs), can co-immunoprecipitate with full length Pcdhs, demonstrating a novel Pcdh cytoplasmic interaction in cis. We show here by cotransfection of Pcdh stubs with full length molecules that the interaction of Pcdh stubs can stabilize cell-cell localization of full-length Pcdhs in an apparent adhesive conformation. In contrast, the Pcdh stubs expressed alone undergo endocytosis and do not localize to cell-cell interfaces. These results suggest that cytoplasmic interaction between full length and truncated Pcdhs might alter the rate of Pcdh endocytosis and convert Pcdhs from anti-adhesive to adhesive molecules. MMPs might therefore be important modulators of Pcdh activity by generating stubs that stabilize Pcdh junctions. This mechanism may have implications for neurodevelopmental disorders such as autism which can exhibit defective neuronal self-avoidance as well as increased MMPs.

**POSTER # 180****Differential SNPs Pattern in Acute Kidney Injury**

Oluwatoyin Saula

Faculty Mentor: Professor Jianying Gu  
Department of Biology

Kidney disease is the ninth leading cause of death in the US, which affects

20 million (10%) of American adults with the majority unaware of their condition. The incidence and severity of acute kidney injury (AKI) is rising globally. The associated morbidity and mortality remain high due to our incomplete understanding of the complex pathophysiology. AKI increases hospital length of stay, costs and more importantly a significant rise in-hospital mortality rates. The diagnosis and determination the severity of AKI is challenging and there is no clinical test exists. There is an urgent need for research to identify populations more susceptible to AKI and to understand the potential genetic basis for AKI cause and treatment.

Previous genomic, transcriptomic and proteomic studies have identified candidate genes that are differentially expressed in AKI, or biomarkers for early detection of AKI. Here we propose to investigate the patterns of single nucleotide polymorphisms (SNPs) in those genes. The initial step is to identify the SNP sites that need to be examined. This will be done by searching SNP databases (<http://www.hgvs.org/central-mutation-snp-databases>) and literatures. Meanwhile, a single-center prospective cohort study will be conducted among AKI patients and healthy controls, hospitalized at Staten Island University Hospital (SIUH) and Academic Hospital Paramaribo (AZP) (collaborating with Dr. Sukhram and Dr. Shen in Biology department at CSI).

The identification of differential SNPs patterns in AKI patients will provide insight in diagnose and predict severity and/or duration of AKI.

Furthermore, our multi-ethnic approach could provide insights into ethnic and/or racial disparities of increased AKI incidence in older adults. Our results are expected to have a positive impact because the identification of biomarkers may improve diagnosis and early detection of AKI, medical care as currently prescribed in the clinical setting.

**POSTER # 158****Environmental DNA Analysis of Freshkills Park**

Joshua Seidman (The Verrazano School)

Faculty Mentor: Professor Eugenia Naro-Maciel  
Department of Biology

Freshkills Park was a landfill that opened in 1947. Due to local pressure, the landfill was closed in 2001. Since then, restoration efforts have been in effect in hopes of creating the worlds largest landfill to park restoration ever. In this research three salt marshes at Freshkills Park are being evaluated along different points in the restoration process. By using Environmental DNA Analysis we can better understand the effects of the restoration project on biodiversity. On two different occasions water and soil samples were collected from these three salt marshes at the park.

Samples taken during different field visits help us compare the microscopic and macroscopic organisms present during each of the different evaluations.

DNA is extracted from soil and water using MOBIO Powerwater kit and MOBIO Powersoil kit. DNA extractions were then sequenced at Juniata College and are currently being analyzed using the program Quantitative Insights into Microbial Ecology (QIIME).

### **POSTER # 149**

#### **Potential Biomarkers in Suicidal Behavior**

Mohamed Soliman, Rachel Koyfman

Faculty Mentor: Professor Shiryn Sukhram  
Department of Biology

According to the World Health Organization, suicide is attempted about every 40 seconds worldwide causing over 800,000 people to die by suicide every year. Data reveals that up to 90% of people who die by suicide have diagnosable psychiatric disorders, known as a mood disorder, psychosis, and/or substance abuse. Identifying a panel of biomarkers that are predictive of suicidal behavior could facilitate early interventions needed to decrease suicide mortality outcomes among suicide attempters. Our comprehensive literature review examined 25-hydroxyvitamin D [25(OH)D], S100 calcium-binding protein B (S100B), Spindle And Kinetochore Associated Complex Subunit 2 (SKA2), and Spermidine/Spermine N1-Acetyltransferase 1 (SAT1) and their potential role in suicidal behavior in high-risk populations. Vitamin D deficiency as measured by 25(OH)D has been linked to inflammatory changes causing suicidal behaviors. Low levels of 25(OH)D are associated with reduced cognitive performance and major depressive disorder (MDD). Patients suffering from severe mental health disorders often have immunological alterations that can be detected in the blood such as elevated levels of the microglial protein S100B. Both genetic biomarkers SKA2 and SAT1 have been associated with a higher risk of suicidal behavior. This is shown through elevated levels of RNA transcripts. Polymorphisms in the expression of the SKA2 gene, responsible for regulating the releasing stress hormones, can modify the way it channels the stress hormone into cell receptors. Research also shows a relationship between microglial inflammation and the blood-brain barrier (BBB) in suicidal patients. Elevated levels of plasma cytokines were found in MDD patients as well as polymorphisms in the SAT1 gene. Our review will present current findings on the above-mentioned biomarkers in suicidal behavior, specifically investigating high-risk populations.

### **POSTER # 10**

#### **The Journals of Elizabeth Dickens: A 52-Year Dataset of Bird Occurrence on Block Island, Rhode Island**

Veronika Stefanishina, Christopher Morales

Faculty Mentor: Professor Shaibal Mitra  
Department of Biology

Elizabeth Dickens recorded her daily observations of birds on a farm on southwestern Block Island from 1912-1963. We will perform computer data entry and then edit these records, making them available for several types of important analyses. For instance, we will look for evidence of historical trends in the abundance and distribution of bird species, and we will quantify several kinds of sampling bias that are usually uncontrolled in citizen-science generated datasets.

**POSTER # 84**

**The Effect of Resveratrol and Pterostilbene on the Proliferation of SiHa Cells**

Palwasha Syar (Macaulay Honors College), Christina Mazza (Macaulay Honors College)

Faculty Mentor: Professor Jimmie Fata  
Department of Biology

Previous experiments testing Resveratrol and Pterostilbene on cervical cancer cells have showed significant inhibitory effects against the proliferation of HeLa cells. Pterostilbene and Resveratrol are organic compounds synthesized from extracts of blueberries, grapes, and raspberries.

Similarly, Resveratrol and Pterostilbene have potent antioxidant properties and an ability to induce apoptosis. The previous study has shown that Resveratrol and Pterostilbene inhibit the HeLa cell cycle at the synthesis phase of mitosis, therefore preventing cells from proceeding to the G2 phase. The aim of this study is to determine the effects of Resveratrol and Pterostilbene on another cervical cancer cell line, SiHa cells. Since SiHa cells are similar to HeLa cells, it is expected that similar results be obtained. Based on experiments on HeLa cells, the drug exposure time for slowing cell proliferation is determined to be 18 hours. Using this time frame, the concentrations of Resveratrol and Pterostilbene are differed in order to determine the ideal concentration for inhibiting cell growth in SiHa cells. The concentrations of the two drugs are set at 5 M, 10 M, 15 M, 20 M, and 25 M. The decrease in proliferation is determined by analyzing the cell cycle of Resveratrol and Pterostilbene exposed SiHa cells through flow cytometry. Pterostilbene has shown a higher efficacy than Resveratrol in inhibiting cell cycle. The previous experiments have shown that Pterostilbene shows arrest beginning at 10 M, and Resveratrol shows arrest beginning at 20 M.

**POSTER # 100**

**A Bioinformatics Approach for Oyster Reef Restoration**

Sean Thatcher (The Verrazano School)

Faculty Mentor: Professor Eugenia Naro-Maciel  
Department of Biology

Oysters are an ecological engineering aquatic species that inhabit shallow coastal, temperate, or tropical waters. In many urbanized locations, such as the New York City Metropolitan area, habitat degradation, over harvesting, and climate change have drastically affected the distribution of these organisms and the species that rely on them. In recent years focus has shifted to restoring these ecosystems to provide important ecological services to coastal regions to protect against storm surges, improve water clarity, and restore regional biodiversity. At Soundview Park in the Bronx, New York, oyster reef restoration efforts are currently underway. To evaluate these efforts a bioinformatics approach, utilizing environmental DNA (eDNA), is underway to compare the biodiversity of the restored to control sites. Alpha diversity indexes have been created to understand the biodiversity, while a Bray-Curtis statistical analysis is used to compare the dissimilarities, and rarefaction curves to determine the species richness between the study sites. This approach would further our understanding of restoration efforts in urbanized marine areas, while providing a new methodology of assessing ecological restoration.

### **POSTER # 154**

#### **Genetic Approaches for Biodiversity: Environmental DNA Analysis of Palmyra Atoll, Central Pacific**

Tina Tran

Faculty Mentor: Professor Eugenia Naro-Maciel  
Department of Biology

Biodiversity is the variety of organisms, from genes to ecosystems, and the ecological and evolutionary processes that sustain them. The earth today faces a decline in biodiversity due to ecological disruption and high extinction rates. Yet too little is known about what is being lost.

Environmental DNA (eDNA) is a new method to effectively identify organisms in a given location by sequencing DNA from water, soil, or air. I implemented this approach to assess biodiversity at the remote Palmyra Atoll National Wildlife Refuge (PANWR). The National Oceanic and Atmospheric Administration (NOAA) collected water samples from 7 sites in the atoll of which DNA extraction was performed using the MOBIO Powerwater Kit and then sequenced at a professional lab. The program Quantitative Insights Into Microbial Ecology (QUIIME) was then used to analyze raw DNA sequences. For this research experiment, I examined these results and looked at which taxon level accurately described PANWR marine invertebrates. I checked a sub-sample of eDNA results against the published literature to determine if that taxon could be present at PANWR or was mistakenly identified due to incomplete reference databases. I found that the accuracy of results at taxonomic levels such as genus and species was questionable, and recommend using operational taxonomic units (OTUs), Orders, or even Phyla until reference databases are more complete.

### **POSTER # 143**

#### **The Effects of Repeated Application of Trans-Spinal Direct Current Stimulation (tsDCS) On Cell Number and Migration**

Michael Maisano

Faculty Mentor: Professor Zaghoul Ahmed  
Department of Biology/Neuroscience

The focus of this particular research project is centered around the effects of repeated application of tsDCS on the number of cells and rate of cell migration. Based on preliminary data collected by Dr. Zaghoul Ahmed, application of tsDCS can increase the total number of spinal precursor neural cells (SPNC). Application of tsDCS has also proven to change the migration pattern of spinal precursor neural cells in healthy mice. Within the research project are several key objectives that serve as the focal points of the research effort. One of the key objectives is to investigate the effects of tsDCS on cell migration and total number of cells with in animals with sustained contusive spinal cord injury (cSCI). To research and collect data for this objective, cSCI will be induced in three groups of mice. In addition to the application of cSCI, the animals will be also implanted with a tsDCS stimulation system developed and constructed in the laboratory. At the commencement of the experiment, we will extract the spinal cord region to be sectioned and prepared, and will be stained with markers indicating glia, neurons, and progenitor cell types. By doing this, we will be able to determine the number of cells, the pattern of migration of cells, and the identity of the cells themselves. The second key objective of this research project is to observe and record the long term effects of tsDCS in regards to cell differentiation and cell survival by extraction of the spinal cord region located under the tsDCS electrode for quantitative analysis. The spinal cord region will be sectioned and prepared, and will be stained with markers specific for indicating mature neurons, and glial cells. Through this, the number of cells and the pattern of migration of the cells will also be quantitatively analyzed.

## DEPARTMENT OF CHEMISTRY

CONFERENCE LOCATION: EAST LOUNGE

### POSTER # 59

#### The Solvation Free Energies of Nucleic Acid Bases

Mohamed Al Sharif

Faculty Mentor: Professor Sharon Loverde  
Department of Chemistry

One of the most important developments in computational chemistry is the ability to precisely calculate solvation free energies of molecules using thermodynamic perturbation. The real aim of these computational methods is to apply them to systems where experiments cannot be performed. The nucleic acid bases are an example of a class of molecules whose solvation free energies are inaccessible experimentally due to problems of low volatility.

The solvation free energies of these molecules have been calculated by utilizing atomistic molecular dynamics techniques. In this 'computational experiment', each individual base was placed into a three dimension cubic box (edge of 36 Angstroms) containing water molecules. Each box was surrounded by an air vacuum in both positive and negative 'z' direction.

Furthermore, the energy required to pull each base from its equilibrated position into the air vacuum was calculated using Adaptive Biasing Force

(ABF) methodology. Output files obtained from these simulations were translated into graphs of  $\Delta G$  plotted against the distance travelled by each base. Results indicate that nucleic acid bases are hydrophilic and exhibit a favorable negative enthalpy change in water environment. Moreover, the free energies obtained show that among this class of molecules, guanine is the most soluble and adenine is the least soluble.

### POSTER # 87

#### Synthesis and Analysis of Poly(4-allylanisole)-chitosan-PEG Core-shell Hybrid Nanogels for Curcumin Drug Delivery

Christopher DiForte

Faculty Mentor: Professor Shuiqin Zhou  
Department of Chemistry

The development of polymer gels offers novel solutions to many of the problems that have plagued drug delivery for some time. These special polymers exhibit the ability to change in size depending on the temperature of the solution that they exist in. The meshwork of these polymer chains also create an ideal environment for trapping fluorescent materials (such as carbon dots) which can be used to analyze and monitor the activity of these gels. The sensitivity of these nanogels to environmental conditions is of special significance to drug designers because it allows for the fine tuning of release rates of drug in vivo. Our nanogel of interest consists of a crosslinked poly(4-allylanisole) (PAAS) nanoparticle as core surrounded by a semi-interpenetrated chitosan-poly(ethylene glycol) (PEG) network as shell.

The hydrophobic PAAS core can carry and protect the delicate curcumin drug molecules. The biocompatible and environmentally responsive chitosan-PEG shell can undergo a swelling/shrinking phase change, which can further stretch or compress the core polymer network, thus trigger the release rate of uploaded curcumin drug molecules. To measure the properties of these microgels, we used dynamic light scattering to determine the size and size distribution of our particles under a variety of temperature values. The curcumin release profiles from these microgels were monitored through the fluorescence measurements of curcumin under different conditions. The increase in temperature can enhance the release rate of curcumin drug. In addition, the fluorescent carbon dots can be embedded into the core nanoparticles during the synthesis, which offers the ability to monitor the temperature change of cells when these nanogels enter into cells.

### **POSTER # 15**

#### **Voltage-gated Sodium Channels**

Kwaku Domfe

Faculty Mentor: Professor Sebastien Poget  
Department of Chemistry

Dr. Poget's laboratory works to understand sodium ion channels. We are working to determine how toxins or certain proteins affect these ion channels and understand the 3D structure and components of sodium channels.

A sodium channel is composed of four protein repeats and in each repeat there are six helices. These domains and helices are arranged in a specific 3D structure to form the sodium channel. A specific linkage between helix three and four in a repeat is known as the "paddle." Predators who use toxins to paralyze prey often inhibit this paddle region to block the signals that produce force and motion. We would like to sequence and understand the structure of the paddle in the sodium channel and, determine if this is where toxins bind to cause paralysis. We are hoping that by understanding the sodium channels it may help future scientists or physicians create useful pharmaceuticals or improve understanding in this area of science.

My project in this laboratory is to produce different voltage-sensing domains from a sodium channel. Currently, we have the DNA sequence from bacteria that produces the entire sodium channel but I only want the voltage-sensing domain. So, we will apply molecular biology techniques such as polymerase chain reactions, bacterial growths, transformations and gel electrophoresis' to determine that we have the correct, viable portion of the sodium channel. These domains will be used to experiment how toxins interact with the voltage-sensing domains.

### **POSTER # 65**

#### **Synthesis of Novel Perylene Derivatives for Non-orthogonal Stacking in Organic Semiconductors**

Christine Fisher (The Verrazano School)

Faculty Mentor: Professor Shi Jin  
Department of Chemistry

Organic electronics is a rapidly growing field due to the advantages organic materials have over their inorganic counterparts, such as reduced cost of manufacture, readily available materials, and flexibility. However, they currently performance issues due to low efficiency. It is believed that efficiency can indeed be increased by altering the degree of stacking between adjacent, stacked molecules. A key contender for usage in organic semiconductors, perylene monoimide (PMI), will be used to demonstrate the properties of conductive materials that have a greater overlap in molecular columns.

PMI displays a non-orthogonal stacking angle upon self-arrangement into molecular columns. A higher degree of frontier orbital overlap, which plays a key role in conducting electricity, results in increased performance.

Derivatives of this compound are synthesized and their respective properties analyzed in order to discover the degree at which they are oriented and how it affects charge mobility.



**POSTER # 133**

**Rescuing Hippocampal Development and Behavioral Deficits in FMR1 (-/-) Mice by Activating PKC Epsilon**

Bishoy Gerges (The Verrazano School)

Faculty Mentor: Professor Probal Banerjee  
Department of Chemistry

My research aim to study the Fragile X syndrome. Fragile X syndrome (FXS) is a developmental disorder that is one of the few identified genetic causes of autism. We have observed that neonatal treatment with a selective PKC activator, dicyclopropenyl-linoleic acid (DCP-LA), rescues hyper-anxiety and social deficits in adult Fmr1 knock out (KO) mice, the leading model of FXS.

My studies aim to investigate the role of PKC in early brain development, and how its activation may counteract changes in signaling pathways in the FXS brain that cause the normal course of early brain wiring to go awry. My studies reveal abnormal surface expression of the AMPA receptor subunit GluR2, in the CA1 region of the hippocampus of postnatal day 18 (P18) in Fmr1 KO mice. This may be highly relevant to the pathogenesis of FXS, as GluR2 is a key participant in multiple forms of long-term synaptic plasticity, which is pathologically altered in Fragile X syndrome. Moreover, we have found that our observed increase in surface GluR2 in the Fmr1 KO hippocampus is rescued by DCP-LA treatment from P6-14, to levels comparable to wildtype controls. The hippocampus is an important hub which regulates the activity of the hypothalamus, which is the brain's main source of the anxiolytic, pro-social hormone, oxytocin. My current studies are therefore aiming to study the effect of early neonatal PKC activation in the Fmr1 knockout hippocampus on hypothalamic production and secretion of oxytocin.

Our studies thus present a novel strategy to circumvent aberrant brain development in FXS and accompanying behavioral deficits, by activating PKC signaling.

**POSTER # 191**

**Synergism among Curcumin, Epicatechin Gallate, and Resveratrol in a Unique Formulation, TriCurin, Which Causes Suppression of HPV E6, Elimination of Cervical Cancer Cells, and Suppression of Tumor Progression**

Rahman Hussaini

Faculty Mentor: Professor Probal Banerjee  
Department of Chemistry

Food-derived natural agents like curcumin (a component of curry)(C), resveratrol (from grapes) (R), and epicatechin (from green tea) (E) display strong potency to eliminate cervical cancer (CCC) cells without injuring normal cells. Since these three agents eliminate cancer cells through complementary mechanisms, we tested the existence of a synergism among these compounds. Using mitochondrial oxidoreductase activity to compute combination indices from CCC (HeLa) treated with C, R, E and combinations of these compounds, we observed a strong synergism among them. The C+R+E combination (named TriCurin) also elicited rapid down regulation of HPV E6 and NF-kB expression along with simultaneous induction of the tumor suppressor protein p53 in HeLa CCC. 80% less tumor growth was observed in mice subcutaneously implanted with the c-Ha-ras and HPV16 E6-expressing CCC TC-1 and then infused with CRE intralesionally. TriCurin infusion yielded no adverse effect in tumor-naïve healthy mice as determined by histochemical analysis. Thus, TriCurin is a safe and promising therapeutic agent against HPV-associated disease.

### POSTER # 102

#### Unique PLGA Microstructures Produced by Solution Blow-spinning

Regina Klimchuk (The Verrazano School), Mohammad Bazrouk (The Verrazano School), Vyshnavi Rajendra

Faculty Mentor: Professor Krishnaswami Raja  
Department of Chemistry

Biodegradable polymer nanofibers are becoming a popular system in drug delivery. Biodegradable polymers can be used to encapsulate drug molecules and release them at a slow and constant rate as the polymer is degraded.

Poly(lactic-co-glycolic) (PLGA), is the most widely used biodegradable polymer. When PLGA is exposed to aqueous solutions, (i.e. blood) it slowly breaks down into lactic and glycolic acids, which are harmlessly metabolized by the body. We have produced PLGA nanofibers by solution blow-spinning, which are quite similar in morphology to those commonly produced by electrospinning. With solution blow-spinning, we have greater control of the nanofibers fabrication. Unlike electrospinning, solution blow-spinning gives us the ability to produce PLGA nano-materials of different morphologies. By the alteration of our PLGA solution concentration, we expect a change in solution viscosity. The normal 10% (w/v) PLGA solution will be diluted down to specific concentrations. These diluted solution will be used to produce nanofibers via solution blow-spinning. The reduced viscosity of these solutions should change the solidification behavior of the polymer and lead to different surface morphologies. With the addition of hydrogen bonding compounds such as citric acid, may be able to alter morphology of the polymer nanofibers. These compounds could possibly form hydrogen bond "cross-links" with the polymer chains and alter the solidification behavior during solution blow-spinning. Any morphological changes will be assessed on with scanning electron microscopy. Quantitative measurements of morphological change will be made with the use of atomic force microscopy, which can give a three dimensional topograph. From this topograph information, surface area and porosity can be extracted and used to compare different nanofiber formulations. This quantitative information can be used in the future to tune the release kinetics, and alter the drug release mechanism.

### POSTER # 67

#### Calculation of Base-Stacking Interactions Using Molecular Dynamics

Dennis Lam (The Verrazano School)

Faculty Mentor: Professor Sharon Loverde  
Department of Chemistry

The stability of nucleic acids is relied mostly on the distance and internal energy of base stacking interactions. Base stacking involves one of the five nitrogenous bases (adenine, cytosine, guanine, thymine, and uracil) on top of another base. Past research shows that in DNA bases exhibit a certain minimum stacking distance in its helix. We can calculate this minimum distance by doing sophisticated computer simulations. This minimum distance is found by plotting the energy between the bases against their respective distances in a computer simulation. The basis of this technique comes from understanding what interactions each base have in the process of base-stacking; non-bonding interactions (also known as van der Waals) make up most of the interactions since the bases are not physically bonded with each other. We are currently calculating the internal energy between different combinations of the five nitrogenous bases with computer simulations, specifically molecular dynamics calculations. Computer simulations used are needed to create a virtual system in order to create a trajectory of the molecules as one base is being pulled from the other base at the constant force. Afterwards, we then can do the final calculation and graph the plot of the non-bonding energy in base stacking interactions.

**POSTER # 14**

**Sponge Biomimetic Programmable Protein-inorganic Tubular Stigmergy Scaffolds**

Xue Qing Liang (The Verrazano School)

Faculty Mentor: Professor Krishnaswami Raja  
Department of Chemistry

Chemical garden chemistry is a key to develop sponge mimetic surface, which embedded protein-inorganic tubular scaffolds. The scaffolds were prepared by concentrated sodium silicate-potassium phosphate solutions with solubilized agar, and seeded it with calcium chloride to produce protein intercalated silicate-phosphate tubes. Polysaccharides and Infrared spectroscopy were used to prove the presence of protein in the constructs. Additionally, scanning electron microscopy (SEM) and transmission electron microscopy (TEM) were used to characterize the scaffolds. *Pyrocystis lunula* was cultured on the scaffolds because this dinoflagellate cell line has a polysaccharide cell wall. The constructs were attached to the dinoflagellate cells. The live cell imaging and confocal laser scanning microscopy were used to confirm the attachment and long-term viability of cells.

Incorporating Nano/micro particles into the constructs using blending-in and surface attachment approaches to expand the scope of the synthetic methodology. This multitasking modular transforms chemical garden chemistry to produce a new generation of advanced materials for the fundamental and applied research community, which includes those working in the area of 3D cell culture, origin of life research and biomolecular material development.

**POSTER # 177**

**Expression of a Human-bacterial Sodium Channel Domain Chimera**

Pablo Llerena (The Verrazano School)

Faculty Mentor: Professor Sebastien Poget  
Department of Chemistry

Sodium channels are membrane proteins that allow the flow of sodium ions through the membrane. They are of great importance in physiological processes including transmission of the nerve signal and regulation of the heartbeat. Their tightly regulated voltage dependent opening and closing is mediated by the voltage-sensing domains. The voltage-gated sodium channel we worked with was Nav1.7. Nav1.7 is regularly expressed in the sensory neurons and sympathetic ganglion neurons. Nav1.7 accumulates at nerve fiber endings and amplifies action potentials that regulate the excitability of a cell.

Nav1.7 has been shown to be involved with pain response, as people with some mutations in these channels are unresponsive to pain. This makes Nav1.7 a potential target for pain relief therapeutic drugs. Therefore screening for toxins that natively bind to this channel can be a useful first step in drug development of potential Nav1.7 inhibitors. The structure of Nav1.7 has not yet been worked out and therefore it is our interest to perform solution state NMR analysis on the recombinant channel, so as to obtain information about the native structure. The paddle motif is a region of Nav1.7 located within the S3 and S4 helices of each domain of the channel. This motif is a common target of natively binding toxins that can inhibit the channel. As a better way of understanding the voltage sensing mechanism, we aim to study interactions of these toxins with isolated VSDs. In this paper, we describe our attempts to express and purify a Nav1.7 VSD as an inclusion body in bacteria, to be followed by refolding into the native conformation. Once successful, this protocol will allow obtaining sufficient amounts of folded VSD for toxin binding studies with the goal of identifying new candidate compounds for pain therapy. We intend to use bacterial channel NavRh and NavCt as models for the mammalian sodium channels.

### POSTER # 171

#### **Influence of Synthesis Conditions on the Structure of Large-Pore SBA-15 Silica Formed at Room Temperature and Assessment of Feasibility of Formation of Silica Nanotubes**

Susannah O'Shea (The Verrazano School)

Faculty Mentor: Professor Michal Kruk  
Department of Chemistry

Silica particles with large pores arranged in a 2-D hexagonal structure with typical diameters of 10 nm, known as SBA-15, which are prepared using surfactant micelle templates, have been the focus of much attention because they can be used as adsorbents, media for immobilization of biomolecules, hosts for nanoobjects, a template for the synthesis of ordered mesoporous carbons, oxides, and sulfides, a support for high-surface-area polymer brushes, and as catalyst supports. It is of much convenience to have these ordered mesoporous materials (OMMs) to have an expanded pore size in order to enhance the pertinence of the aforementioned applications. In order to do so, one needs to introduce a micelle expander (swelling agent) to the synthesis mixture that would solubilize well in micelles of the surfactant used and those that bear a conservative swelling ability in order to obtain and retain a homogeneous, well-defined structure, all while achieving an enlarged pore diameter. A recent study in modifying the synthesis conditions for SBA-15 allowed one to obtain silica nanotubes instead of the 2-D hexagonal structure of pores. The surfactant used in my syntheses is a Pluronic block copolymer, P103 and the swelling agent used is one that solubilize conveniently in this surfactant, 1,3,5-triisopropylbenzene (TIPB). I have explored the limits of pore diameters and unit-cell sizes achievable at room temperature for highly ordered large-pore SBA-15 silicas by adjusting the amount of TIPB micelle expander, while using TEOS as a silica precursor and P103 as the micellar template. Through the lowering of the ratio of silica precursor to surfactant as well as the lowering of the surfactant concentration, the use of NH<sub>4</sub>F additive, and the lowering of the stirring rate, I was able to observe the formation of nanotube bundles. I characterized my products using gas adsorption, transmission electron microscopy (TEM), and small-angle X-ray scattering (SAXS).

### POSTER # 118

#### **The Crosslinking Reaction of Alginate Gels Using Calcium Chloride**

Svitlana Petrashchuk

Faculty Mentor: Professor Alan Lyons  
Department of Chemistry

Cells cultured in a three-dimensional hydrogel network have been shown to be better models for drug-cell interactions than when cells are cultured on traditional, two-dimensional surfaces. In this research project, the crosslinking reactions of Alginate gels with calcium chloride have been studied. In the experiment, free-standing alginate gel drops were immersed in a calcium chloride solution using a copper mesh to support the droplets.

As the calcium ions diffused into the sodium alginate droplets, cross-links between alginate molecules form a more rigid gel wall covering the alginate bead, isolating the two solutions. Different concentrations of alginate and calcium were used to determine how crosslink density affects the rate of the curing reaction. Also, the rate of the diffusion through the cured, crosslinked droplet was studied by using a small molecule dye, Rhodamine B that can diffuse through the pores of the wall of the alginate bead. The rate of diffusion was measured using a UV-vis spectrometer. Another experiment was performed using smaller drops. These droplets were generated by immersing a specially designed super-hydrophobic surface into alginate gel solution.

The results showed that the concentration of the reagents along with a dye affects the rate of the diffusion. The higher the concentration of the Rhodamine B dye, alginate gel and calcium results in a faster rate of molecules diffusing through the pores of the ~ 3 millimeter diameter beads.

Also, studies showed that the size of the drop affects the rate of diffusion; in smaller droplets of the dye molecules diffuse faster into the surrounding water solution than in the larger droplets.

**POSTER # 49**

**Determining the Stability of Proteins Immobilized Within Solid Polymer Nanofibers**

Nicole Pillarella (Macaulay Honors College), Xue Qing Liang (The Verrazano School)

Faculty Mentor: Professor Krishnaswami Raja  
Department of Chemistry

Biodegradable polymer nanofibers such as poly(lactic-co-glycolic acid)

(PLGA) are becoming a widespread system for drug delivery. Almost all methods used for preparing polymer nanofibers require the use of organic solvents and can only deliver therapeutic agents that dissolve in organic solvents such as acetone, chloroform, and tetrahydrofuran. These solvents are not capable of solvating ionic species and their use limits the therapeutic agents that can be delivered via polymer nanofibers. Proteins are complex polyelectrolytes, meaning they would be difficult to load into polymer nanofibers by conventional means. Many proteins and peptides could be useful therapeutics, including cytokines, such as tumor necrosis factor, and enzymes, like lysozyme. Using ionic detergents we have successfully solubilized proteins in organic solvents. The stability of the two proteins, hemoglobin and fibrinogen, were evaluated. The integrity of the proteins while solubilized in organic solvents is important, since the proteins must be kept in their native state to retain their biological activity. Also, their integrity after being released from PLGA nanofibers must be determined because if they are not delivered in an active form they cannot be used as therapeutics. By extracting these proteins back into aqueous solutions, the integrity of their tertiary structures were evaluated using active-SDS-PAGE.

After loading both proteins into PLGA nanofibers, the fibers were allowed to degrade in PBS and release the proteins. The integrity of both proteins was evaluated after their release by native-SDS-PAGE.

**POSTER # 176**

**Recombinant Expression and Folding of Gating Modifier Toxin ATX II to Study Structural Interactions with Nav1.5DIVS3-S4 Paddle**

Peter Principe (The Verrazano School)

Faculty Mentor: Professor Sebastien Poget  
Department of Chemistry

Voltage-gated sodium channels (Navs) are important integral membrane proteins responsible for the initiation and propagation of action potentials. Due to the hydrophobicity of the protein, a truncated mimic of the cardiac sodium channel (Nav1.5DIVS3-S4 paddle) was synthesized. Sea anemone toxin, ATX II, is known to bind to Domain IV of the full Nav1.5 channel, thus it can be used to experimentally test if it will interact with the truncated fragment. If interaction does occur, it will confirm that the truncated channel adopts a native conformation. The ATX II gene was codon optimized for bacterial translation, ligated into pMMHa, and confirmed by sequencing. ATX II protein was maximized by varying parameters such as various Escherichia coli expression cell lines, induction methods, and induction time frames.

### POSTER # 34

#### **Curcumin-loaded Poly (lactic-co-glycolic acid) Nano Fibers by Solution Blow Spinning for the Treatment of Cervical Cancer**

Vishnavi Rajendra

Faculty Mentor: Professor Krishnaswami Raja  
Department of Chemistry

Drug releasing nanofiber mats have been studied extensively for localized drug delivery applications.<sup>1</sup> Curcumin, the primary active ingredient in the spice Turmeric, has been shown to have anti-cancer activity<sup>2</sup>. Curcumin is a very hydrophobic molecule and does not dissolve in water so it cannot be delivered directly in vivo. We intend to generate curcumin loaded poly (lactic-co-glycolic acid) (PLGA) nanofibers via solution blow spinning<sup>3</sup>, using a commercial air brush and compressed CO<sub>2</sub>, for using it as an implant for treating cervical cancer. These nano fibers are able to degrade in vitro and in vivo to provide a slow release of the embedded curcumin as well as solubilize the curcumin in aqueous solutions to more effectively deliver it. The nano fibers are characterized by scanning electron microscope for morphology and by dynamic mechanical analysis for the mechanical properties, curcumin embedding by confocal laser scanning microscopy, and anti-cancer activity by the WST assay. The time dependent degradation of the nano fiber mats is studied by monitoring the release of curcumin by Ultraviolet-Visible spectrometry, over a period of time. The anti-cancer activity of the nano fibers will be tested against HeLa cells in vitro.

### POSTER # 146

#### **Effect of Surface Chemistry and Structure on the Adhesion of Alginate Hydrogel Droplets**

Michael Weitzman (Macaulay Honors College)

Faculty Mentor: Professor Alan Lyons  
Department of Chemistry

Alginate hydrogels are an interesting type of natural polymeric material because they form an inert three-dimensional environment in which cells can be cultured. This environment allows cells to grow more naturally as opposed to when they grow on a typical two-dimensional surface. The challenge of using these hydrogel droplets for the culturing of cells is that the gels do not adhere well to standard plastics used for cell culture microplates. As a result, the gel droplets can be lost or damaged when the growth medium is changed. By improving adhesion, cells can be cultured more effectively. To improve adhesion we studied different surface structures and surface modification processes. Drops of hydrogel were placed on polystyrene substrates that were both flat, and shaped into posts. These hydrogel solutions were prepared at different concentrations. The effects of the different surfaces and hydrogel concentrations were tested. To accelerate the adhesion tests, the drops were immersed in PBS (phosphate buffered saline) solution and placed in a 37 degree Celsius oven. The number of hydrogel droplets remaining on each surface was recorded as a function of incubation time.

## DEPARTMENT OF COMPUTER SCIENCE

CONFERENCE LOCATION: BOTTOM FRONT

### POSTER # 85

#### How to Improve Underwater Wireless Sensor Networks to Track and Monitor Ocean Oil Spills?

Awwab Ali (The Verrazano School),  
David Brady

Faculty Mentor: Professor Zhanyang Zhang  
Department of Computer Science

Ocean oil spills have devastated impacts on marine ecosystems, economies and societies in surrounding coastal areas. How to track and predict oil propagation path after spill is critical to deploying resources in a timely manner. Using the Lattice Boltzmann Method (LBM) simulation with real time sensor data assimilation is a promising approach to address the problem. It can be used to solve complex fluid dynamic problems which exhibits nonlinear behaviors associated with many mathematical and simulation models. By providing a simplified structure, LBM makes predicting an ocean oil spill path with reasonable computational complexity possible. Augmenting real time sensor data enhances the performance of simulation without significantly increasing computational demands. Since real data is used in a sequence of steps to correct occurring, the LBM simulation is less sensitive to the initial conditions. In our paper we design and implement a proof concept prototype of a two dimensional LBM simulation with a synthetic data set as real time data.

This research contributes to the intersection between mathematical analysis, computer science and real-world applications of the two disciplines. By utilizing a probability method along with various differential equations of a particle's movement, we demonstrate a simulation of the oil spill, offer analysis which could be used to help contain and possibly prevent such environmental catastrophes from occurring.

Beyond this research, we can understand and learn to use real-world applications rather than use conditions that would be self-made, so the simulation would more closely resemble a realistic oil spill path if one were to occur. This is also the perfect opportunity to conclude our college careers, having majored in the joint Computer Science-Mathematics program and prepare us for analytical careers which uses such computations in real-world situations among various development projects.

### POSTER # 178

#### Applications of Twitter Data

Claudia Bergeron

Faculty Mentor: Professor Sarah Zelikovitz  
Department of Computer Science

Twitter.com, founded in 2006, is a social networking site in which users can post a message of 140 characters as well as pictures, links, and videos, to a publicly available profile or as direct messages to other users. Since Twitter's inception it has had an exponential growth of participants. As of the first quarter of 2015, the number of active twitter users averaged at an astounding 236 million. About 6,000 tweets are posted every second by its variety of members from personal users to retailers, companies, celebrities, and organizations. Utilizing the twitter application management system, used by developers to create various apps for different uses, at dev.twitter.com, we have extrapolated various kinds of data to explore trends in Twitter's use.

First, using twitter's Rest Application Programming Interface (API) we set up a PHP code to procure tweets containing URL links from any chosen user.

The code then extracts the plaintext from the linked pages, parses the words, and represents them as a bag of words (BOW) using stemming and stopword removal. By calculating the number of common words in the tweet and URL plaintext we investigate if and how frequently users post unrelated links. They appeared predominantly related.

Extending our investigations, using twitter's Streaming API, we set up a python code to gather information from the public twitter stream—the most recent posts from all twitter users. By collecting a feed filtered to any tweets in English containing “depression,” we amass a vast corpus of data. Using methods of machine learning to classify tweets posted by legitimately depressed people, we explore trends in depression over time, and what else may affect it.

### POSTER # 36

#### **Improving Cluster Analysis Performance by Combining Clustering and Sammon and Fuzzy Sammon Projections**

Matthew Chiappa

Faculty Mentor: Professor Natacha Gueorguieva  
Department of Computer Science

Hard clustering and fuzzy clustering analysis is the basis of the construction of many classifications and clustering systems with the main focus on planning and dividing data into many subsets according to certain rules. In most of the clustering problems high-dimensional data are involved. Hence, the resulting clusters are high-dimensional geometrical objects which are difficult to analyze and interpret. Cluster validity measures try to solve this problem, but they reduce the information into a single value. The low dimensional graphical representation of the clusters could be much more informative than such a single number.

It is often necessary to reduce the dimensionality of a dataset, in order to make analysis computationally manageable, or to facilitate visualization.

For the purposes of computer vision, we are most often interested in reducing the dimensionality of a large set of real-valued vectors (representing patterns in some high-dimensional space), and in the course of such reduction, it is useful to preserve structure as much as possible.

The Sammon Mapping (SM) and Fuzzy Sammon Mapping (FSM) are the most successful nonlinear methods which improve the quality of scaling as they capture the local structure of the data by using measures in a way that does not affect the topology. The modified SM and Fuzzy Sammon Mapping (FSM) are based on the properties of fuzzy clustering algorithms and they map the cluster centers and the data such that the distances between the clusters and the data-patterns are preserved.

The goal of this research is to design iterative procedure which minimizes the objective function of the original clustering algorithm by using the properties of clustering algorithms. It is based on different similarity measures as well as implementation of Sammon and Fuzzy Sammon projections which are used for evaluation of mapping of respective cluster centers, the distances between clusters and the data-patterns.

### POSTER # 112

#### **SATELLITE DESIGN PROJECT - ROBBINS-1 Satellite Mission SUBSYSTEM TEAM - Human Interface Design (Graphical Control System Programming)**

Nick Devitto

Faculty Mentor: Professor Robert Domanski  
Department of Computer Science

The team's goal is to design a Cube Sat Satellite system to function as a flexible orbiting space science research platform as the core part of the Satellite Design Project here at CSI. Many Colleges and Universities, across the country have already initiated Cubesat programs as a low cost means for their academic research personnel to perform experiments in space. The Satellite Design Project will service CSI's research personnel in the same capacity. The Satellite Design Project already has several CSI faculty members from the fields of Engineering, Physics, Chemistry, Mathematics, Oceanography, and Computer Science on its mission selection panel. The initial stages of the first two experiments, which are planned to be launched on ROBBINS-1 in the first quarter of 2017 have begun.

Our Cubesat satellite design referred to as the ROBBINS space science research platform, or simply ROBBINS, consist of several subsystems in the form of electronic and mechanical software controlled hardware. The software being developed for ROBBINS must meet several parameters in order to achieve its goals. These parameters are as follows:

- 1) The Program must be able to mitigate errors caused by random bit errors due to high levels of radiation in the environment of space.
- 2) The program must efficiently provide control of and interface with all Satellite subsystem functions via reliable wireless link.
- 3) The software must be flexible enough to control and monitor satellite health, automate and control the specific scientific experiment, and store and forward resultant data via downlink to the ground station. In most cases the data will be categorized as it is collected from the onboard scientific sensors based on the specific type of space science and/or Earth observing experiments being conducted for the current mission.



**POSTER # 134****Connecting Using Kinect:  
Assessing Collaborative  
Learning**

Gabriel Goldstein, Ivan Cuenca, Kevin Geocos, Stan Leskov, Jesus Arteaga, Hassan Elsherbini

Faculty Mentor: Professor Deborah Sturm  
Department of Computer Science

We report on an ongoing project to build a two player collaborative game designed to support student engagement. We are studying whether students, including those on the autism spectrum, communicate and collaborate more effectively when engaging in a collaborative activity with one another through an intermediate medium (as cartoon avatars in a digital work space) relative to an in-person version of the same task. In one collaborative emotion building task, two players work together to assemble a puzzle that expresses an emotion that is consistent with the background context. Players use Picture Exchange Communication System (PECS) cards (digital or real depending on task-space) to confirm agreement on the next action. Once the players complete a puzzle there is a choice on what rewards are offered.

One is a mini game where players collaboratively erase a mask to reveal the true image. The second reward is viewing a nature video randomly selected from over a hundred available choices. Through the Kinect platform, the players are fully engaged, standing, using their hands as a mouse (without a physical controller) to move the puzzle pieces on a common screen. The game is programmed using Unity with C#. This technology should allow us to study dyadic interactions between pairs of players both of whom have autism, pairs wherein one player has autism and one is typically developing, and pairs of typically developing individuals. Our long-term goal in this study is to compare engagement, social interaction, and learning across two conditions, game mediated or in-person. We expect that technologically mediated collaboration may be maximally engaging for students with autism as they tend to struggle with collaboration during in-person interactions.

**POSTER # 160****Smart Home for Elderly and  
Disabled People**

Muhand Jumah

Faculty Mentor: Professor Zhanyang Zhang  
Department of Computer Science

In 2013 the population of elders hit 44.7 million and expected to be 83.7 million in 2050, that's almost the double in only 37 years; This huge growth can affect people in many ways and mostly in healthcare; therefore, new models of care are needed in order to improve the way we help these elders while maintaining low cost and increasing efficiency. Thanks to technology where it started to solve many problems around the world in every field. Today we can use technology to solve this problem by trying to develop a "smart home" where it's going to be a house full of sensors which will collect information and send it to a central hub which in turn will process this information and take an action based on it. This technology will enhance the human's way of living, in many ways, such as, safety, security, entertainment and provide comfort. Such devices will allow elderly to live independently in their own sweet, warm home. Which will not only benefit the elders from safety, healthcare costs, etc. but it will also benefit the community by reducing the costs, etc. To build such a system one would need 3 things, bunch of sensors, central hub and a controller. Usually these sensors are used to keep track of vital signs, movement and keeping track of possible unintended appliances, such as, stove, or a faucet. On the other hand, the central hub is the brain, this device will receive all the information from the sensors then will process them and based on these results it will send signals to the controllers. Controllers are just devices that receive signals and based on that signal it will control another device or do some kind of an action, such as, call police, turn on a light, call for an ambulance, etc.

### **POSTER # 38**

#### **Database Normalization Using Boyce-Codd Normal Form**

Patrick Kevorkian

Faculty Mentor: Professor Zhanyang Zhang  
Department of Computer Science

The purpose of this study is to understand "Boyce Codd Normal Form"

(BCNF), a normal form used in database normalization. This normalization is a process by which to organize the columns and tables of a relational database in an effort to reduce data redundancy. If a relational scheme is in BCNF then all redundancy based on functional dependency has been removed, although other types of redundancy may still exist. Covered will be four key points. First, a short History of databases and BCNF normalization. Second, theory and decompositions behind BCNF. Third, application, use, and the advantages/disadvantages of BCNF. Lastly how BCNF can be implemented algorithmically to develop a computer program to normalize database schema.

These four key topics will allow us to consider all aspects of BCNF in order to understand it effectively.

### **POSTER # 35**

#### **Modified Fuzzy Gustafson Kessel Clustering Algorithm for High Dimensional Applications**

Austin Krauza (Macaulay Honors College)

Faculty Mentor: Professor Natacha Gueorguieva  
Department of Computer Science

The goal of a clustering algorithm is to find the structure hidden in data, and to group the data with similar attributes to the same cluster, according to their degree of similarity. Most clustering algorithms do not rely on assumptions common to conventional statistical methods, i.e. underlying statistical distribution of data, and therefore clustering algorithms are useful in situations where little prior knowledge exists. For this reason, they can be employed in a wide variety of applications, including classification, image processing, pattern recognition, modeling and identification sensor processing etc.

The performance of objective function-based fuzzy clustering algorithms depends on the shape and volume of the clusters, the initialization of the clustering algorithm, the distribution of the data objects, and the number of clusters contained in the data. We propose an extension of Fuzzy Gustafson-Kessel (FGK) algorithm by developing adaptive validation criteria for the merging of clusters during unsupervised learning. There are no mathematical methods for solving this optimization task analytically.

Many clustering algorithms suffer when applied in high-dimensional spaces, where sometimes the cardinality of the data sets available is even less than the number of variables, such as with many bioinformatics data sets, or in web data mining problems. Increasing the data space dimensionality may introduce a large number of suboptimal solutions (local minima).

In this research, we propose a solution to the problems highlighted above by extending the FGK algorithm using adaptive cluster merging. Its criteria include analysis of partition coefficient (PC) and distances after FGK implementation. The performance of the proposed approach was examined on generated and benchmark data sets, and compared to those received by respective fuzzy counterparts. Additionally, its efficiency was tested on data collected from some current real world applications.

**POSTER # 206**

**GPU Acceleration for Digital Holographic Image Reconstruction and Processing Group**

Ivan Mazo, Danielle Lopez

Faculty Mentor: Professor Shuqun Zhang  
Department of Computer Science

The objective was to implement image processing algorithms on a GPU.

Additionally, to use phase shifting holography, specifically two-step-only quadrature phase shifting holography to record and reconstruct an object.

Afterward, to estimate the reference wave intensity needed by the two step method using algorithms. Lastly, to compare the time for estimating the reference wave intensity between the CPU implementation versus the GPU implementation.

**POSTER # 42**

**Data Classification with Support Vector Machine**

Adriana Robledo

Faculty Mentor: Professor Natacha Gueorguieva  
Department of Computer Science

Learning and classification of a given pattern are processes that take place in a wide variety of systems and are well performed by the human brain. If the learning process has access to the desired output (class) from a given input (learning patterns), it is called supervised. Such learning algorithms usually perform iterations, configuring the internals of the learning system until a minimal or acceptable error between produced output and desired output has been reached. Learning can also be unsupervised, meaning that the system is without paired sets of input and desired output. The algorithm itself establishes the clusters based on statistical irregularities in the pattern.

Pattern recognition can be achieved through both linear and non-linear classifiers. In a linear classifier, a linear function is used to map the input feature vector, or independent variables, to the decision, or dependent variable. Regression can be also used to classify indirectly by finding boundaries. These boundaries are then used to define areas representing classes. Note that the term «linear regression» is used even if the resulting decision surface is not a line, instead «linear» refers to the mapping between input and output. Non-linear classifiers include concepts such as neural networks. The concept of support vector machines allows for both linear and non-linear implementations while a Bayesian network is an example of a probabilistic technique for classification involving estimation.

Support Vector Machine (SVM) is one of the most successful learning algorithms proposed in recent years. The basic idea of SVM learning can be easily adapted for classification, clustering, regression, and novelty detection tasks, since the SVM shows remarkable properties and generalization ability in all these areas.

### **POSTER # 168**

#### **Linguistic Differences as Observed on Twitter**

Swathi Satty (Macaulay Honors College)

Faculty Mentor: Professor Sarah Zelikovitz  
Department of Computer Science

My Project uses Python in conjunction with NLTK to extract and analyze data from the popular media site "Twitter". Twitter is a social network where individuals can stay connected through the use of frequent online messages.

The messages come in the form of text, photos, video footage and links.

Twitter is a great way to understand the use of colloquial language among individuals from all different locations and time zones because people freely exchange thoughts with and about friends, celebrities, and companies (Individuals, both private and high-profile, and companies such as TMZ, Enews, etc. have their own Twitter accounts). The data that I am gathering and analyzing is downloaded from Twitter servers in the form of a dictionary which holds information about the user and their tweets, according to many different keys and objects that are provided to the public. This allows me to narrow my pool of data to specific keys I would like to use in collecting data. Many find this useful because it allows researchers to find popular trends, most commonly used slang terms, etc. Generally speaking, it is a great way to understand more about what people like to talk about and what connects people to each other from all around the world. My research question is "What are the most frequently used slang terms from different time zones around the world?" My collected data is in English so I am able to see what topics are discussed and how people generally react to those topics. It is interesting to see the differences in how people convey their feelings about certain topics based on what colloquial terms are frequently used. This linguistic analysis is very relevant since we are currently learning about the way people like to communicate over the Internet. My work presents the data in graphical form to represent any potential trends in the use of the colloquial language so it can be visually displayed for others to be able to see certain patterns and differences.

### **POSTER # 104**

#### **Finding Partial Hash Collisions through Brute Force Parallel Programming**

Rebecca Thayil

Faculty Mentor: Professor Xiaowen Zhang  
Department of Computer Science

A hash function hashes an arbitrary length of longer message, produces a fixed length of shorter message digest or hash value. Inevitably there will be two or more messages being hashed to the same or similar digest. We call this collision or partial collision. In this paper by utilizing the CUNY high performance computing facility, we locate partial hash collisions with the brute force method at a quicker speed than if we did not use parallel programming computation. The brute force method of finding a partial hash collision entails systematically computing all of the permutations, hashes, and Hamming distances of the target string. This paper explores varying target string lengths and the number of processors allocation and examines the effect these variables have on finding partial hash collisions. This research employs MD5 and SHA1 hash functions. The results show that for the same message space the search time for the partial collisions is roughly halved for each doubling of the number of processors; and the longer the message length is the better partial collisions are produced.

**DEPARTMENT OF CURRICULUM  
AND INSTRUCTION**

CONFERENCE LOCATION: UPSTAIRS WALKWAY

**POSTER # 194**

**2015-2016 Child Study Research  
Project: Teaching Young  
Children from Multilingual and  
Multicultural Backgrounds**

Alexa Garetano

Faculty Mentor: Professor Ting Yuan  
Department of Curriculum and Instruction

The research project that I conducted is a child study based on Andy, a four-year-old student, as part of my coursework in early childhood education. Through Andy's case, the purposes of the study include: (1) learning the literacy practices of young children who come from immigrant families or have multilingual backgrounds, and (2) developing teaching approaches and strategies to work with children whose home languages are not English. Through my collected data that feature Andy's classroom talk, informational conversations with peers, play, and symbol making on paper. I observed and worked with Andy from his first weeks of school in the fall until this spring, from a child who did not quite socialize with his peers and was unsure of navigating play in his classroom to an active symbol maker (though visual and written texts), player, and friend. Moreover, my case study reveals that children learn at their own pace and based on their own cultural backgrounds.

Especially when working with English language learners with multicultural and multilingual backgrounds, it is important to consider their "assets" and the knowledge they can bring to the classroom. Also, learning about the ways they communicate allows the teacher and students to learn from each other so as to create a successful democratic learning environment. By appreciating and encouraging children's storytelling, drawing, dramatic and pretend play, and written language, teachers can not only help children better recognize and understand language and literacy learning but also motivate children's social learning in the classroom.

**POSTER # 29**

**Exploring Teaching Styles and  
Learning Styles in a Dance  
Classroom**

Julie LaGrotta (The Verrazano School)

Faculty Mentor: Professor Gail Wangel  
Department of Curriculum and Instruction

Differentiation is now a key term used in classrooms all over the country.

Adhering instruction to meet the needs of all students proves to be the most effective way to teach. Considering there are all different learning styles, there must be different approaches to meet these learning styles. With this thought in mind, I believe that differentiation should be implemented in all educational settings, including the dance classroom. All students learn differently and pick up choreography differently.

After identifying each student's specific learning style, my teaching methods will alter to meet their needs. Over the course of six weeks, I will document the progression or regression of each dancer. My overall goal is to find whether or not adjusting instruction when teaching choreography to children is necessary for them to reach their highest potential.

### **POSTER # 164**

#### **Education Crisis in Bangladesh**

Amna Mukhtar (The Verrazano School)

Faculty Mentor: Professor Deborah DeSimone

Department of Curriculum and Instruction

There are many different things wrong with education in third world countries. I will be focusing on Bangladesh and how education varies from urban to rural areas. From my research it can be concluded that students in the urban areas tend to continue education rather than rural areas. However, my research further breaks down into public and private education, and the qualification of the teachers. Public education in Bangladesh is very different from the public education we receive in the United States, and the teachers are not motivated to teach. And even then, there is a further difference in the education for boys and girls. Gender roles are very prominent in Bangladesh and women are expected to get married and be a housewife rather than a workingwoman. But just because they will not be working in the future, they still deserve a secondary education. The education crisis in Bangladesh really needs attention from developed countries and the officials in Bangladesh in order for any major changes to occur. The time frame for this research is from 2013 – 2014.

### **POSTER # 132**

#### **Classroom Management in an Elementary Classroom**

Cassandra Perrina (The Verrazano School)

Faculty Mentor: Professor Judit Kerekes  
Department of Curriculum and Instruction

In my undergraduate research, I will be researching and working in a classroom to discover and implement different strategies for managing a classroom. The classroom I am teaching in is a Title 1 NYC elementary Public School. As a new teacher, classroom management is one of the hardest skills to master. Researching and practicing different methods is a very important skill a new teacher should practice. Classroom management comes with a lot of practice and knowledge. Practicing classroom management will improve over time because you are using the knowledge of your students and different skills acquired. Discovering different techniques is very important to find what works well with a group of students. Examples of different strategies to improve classroom management include behavioral charts, positive and negative reinforcements, Positive Behavior Intervention Systems (PBIS), phone call home, behavior contracts. In my studies, I discovered that what might work well with one teacher in a particular class might not work well with a different teacher in another class.

My poster will display the research of different strategies I used working in a classroom as a student teacher. It will demonstrate which strategies worked well in my classroom and which that did not have much of an effect.

Classroom management is the key to teaching. Without being able to manage a class, learning cannot take place. Managing student's behavior is part of the classroom's management. Using different conventions with students to see which work best for that student can help the student succeed in their learning and education. Since classroom management is so significant, I feel as a soon to be teacher researching and practicing different classroom management strategies will help me in the future.

**POSTER # 151****English Language Learners: The Struggles and Triumphs in the Classroom**

Victoria Sax (The Verrazano School)

Faculty Mentor: Professor David Allen  
Department of Curriculum and Instruction

In the public school system there is an increasing number of students whose first language is not English, often referred to as English Language Learners (ELLs). Not being able to speak or understand English creates a barrier between the teacher and the ELLs or even possibly the students with other students. Instruction methods along with content have to be altered to fit the needs of these children. Many ELLs are taken out of class several times a week to practice learning and understanding the language. But how does a student become able to speak, read, and understand English fluently?

It does not happen in one class period but rather their progression occurs over a period of time. It takes proper training and dedication to help these students become fully immersed in the English language. I will be researching the struggles that ELLs face in their classrooms as well as their triumphs and success stories. I will also be including my personal experience of teaching and observing English Language Learners in an eighth grade class.

**POSTER # 193****Effect of Physical versus Virtual Manipulatives on Student Mathematics Retention**

Stephanie Sheehan

Faculty Mentor: Professor Irina Lyublinskaya  
Department of Curriculum and Instruction

Throughout the course of this study, the retention of geometry knowledge by high school students will be compared after the use of one of two different media of instruction: Patty Paper (physical) and GeoGebra (virtual) manipulatives. As technology use in the classroom becomes more prevalent, teachers often turn to new applications and devices to assist in their instruction. Yet, do we really know the effect it has on our students? This study aims to answer the following research question: which type of instruction promotes higher mathematics retention, instruction with physical manipulatives or virtual manipulatives?

The participants of the study are students from two sections of the same geometry course in a charter school. Both sections will be taught the topic of geometric translations using the discovery approach by the same instructor. One section will use patty paper to discover the properties of translations, while the other will use the dynamic geometry software GeoGebra. The study will follow a pre/post-test comparison group design to compare student learning immediately after material was taught. The chapter test will be administered 2 weeks after the topic is taught to compare retention of material by the two sections.

The results of this study have the potential to greatly assist mathematics teachers in teaching geometric translations. These results will inform instruction and the mediums teachers should choose to increase student retention. In the future, it will be interesting to explore if findings from this study could be applied to teaching a different mathematics topic.

**POSTER # 192**

**The Effect of Short Mathematics Instruction in High School Chemistry on Students' Chemistry Achievements**

Omri Shick

Faculty Mentor: Professor Irina Lyublinskaya  
Department of Curriculum and Instruction

This quasi-experimental research explores how short and focused mathematical instruction at the beginning of each chemistry lesson affects students' achievement in chemistry. Mathematics is an integral part of chemistry and students who learn it need to have mathematics skills in order to solve chemistry problems. There are different tasks in chemistry that require math skills. For instance, finding ratios for mixing solutions or balancing chemical equations. Therefore, lacking math skills could affect the student chemistry performance and achievement. One possible way to strengthen the math skills is to introduce the students to a review of basic mathematical skills that are needed for chemistry lessons using short focused instruction at the beginning of each chemistry lesson. The study is guided by the following research question: What is the effect of short math instruction at the start of every chemistry lesson session in chemistry achievement? The study is intended to explore whether adequate math proficiency allows the students to enhance their conceptual comprehension of the chemistry course of study. As part of this quasi-experimental study, the two high school chemistry classes were assigned randomly to an experimental and control groups. Both classes received the same instruction covering the same chemistry content. The experimental class received about five to ten minutes of math instruction followed by problem solving. The pre/post test data that are collected from both classes in order to compare chemistry achievement gains between the two groups. Additionally, the study explored whether there is a relationship between mathematics skills and chemistry achievement in the experimental group by collecting scores of math quizzes. The result of this project could provide teaching strategies necessary for improvement of chemistry achievement of students who lack basic mathematics skills.

**POSTER # 196**

**2015-2016 Child Study Research Project: Teaching Young Children**

Jennifer Terranova

Faculty Mentor: Professor Ting Yuan  
Department of Curriculum and Instruction

The purpose of this research project is to (1) find out the emergent language and emergent literacy experiences of young children who come from immigrant families and/or have multilingual backgrounds through the case of a focal child, including examining their verbal, visual, and physical attempts to communicate as well their academic performances; and (2) develop classroom-based teaching methods and strategies for working with this particular group of children.

I followed a child named William during Fall 2015 and Spring 2016 in a universal prekindergarten classroom. My data collection includes: (1) his classroom artifacts; (2) informal conversations with his peers, and his classroom teacher to learn about his classroom learning environment and social world; and (3) weekly observation notes to document William's language and literacy learning process. Throughout the project, I was able to apply many crucial aspects of William's language and literacy development to my fieldwork teaching, as concluded by my reflective journals and a research paper. My findings include: William is a visual learner who uses oral language to build upon his vocabulary; he is further a creative text designer, player, and singer in his classroom.

My evolving teaching approaches and strategies for working with children like William with multilingual backgrounds include: (1) using visuals for teaching clarifications or references, (2) bringing diverse language materials into the classroom, and (3) using songs and chants to engage children's language learning. Young children are constantly developing themselves and growing in all aspects of learning in a well-designed classroom learning environment.



## DEPARTMENT OF EDUCATIONAL STUDIES

CONFERENCE LOCATION: UPSTAIRS WALKWAY

### **POSTER # 90**

#### **Effects of After-school Programs**

Sabrina Qasim (The Verrazano School)

Faculty Mentor: Professor David Kritt  
Department of Educational Studies

After-school education, for students of all ages, has been around for decades. In recent years, there have been numerous studies and reports, as well as much discussion about the effects after-school programs have on students' social, behavioral, and academic skills. In addition, there have been questions asking if after-school programs actually benefit students' academic careers, such as their grades and test scores. A thorough review of the literature, on the effects and outcomes of after-school programs, was conducted.

For the most part, the research focuses on the impact after-school programs have on students' test scores, and how participation in these after-school programs affects reading and math scores. Other effects of after-school programs will be discussed, including general performance in school, conduct grades, outlook on school, and the impact on personal development. Although, there are numerous effects of after-school programs on students' lives, this report will center upon academic outcomes, as well as other outcomes that contribute to students' school lives.

Certain after-school programs, do in fact, slightly increase students' reading and math test scores, as well as students' grades. Outcomes and results differ depending on the qualities of the program. Reading programs enhanced students' reading skills, just as students' weekly attendance contributed to their overall success. The characteristics of after-school programs play a major role in shaping the experiences students will have and the outcomes that will occur. Positive academic outcomes have been a result of after-school programs that have supportive environments, rather than structured interaction or purposeful engagement.

## DEPARTMENT OF ENGINEERING SCIENCE AND PHYSICS

CONFERENCE LOCATION: BOTTOM FRONT

### **POSTER # 111**

#### **Microprocessor-based Control of Greenhouse Environment**

Thomas Carbonaro (The Verrazano School), Julio Mezarina

Faculty Mentor: Professor Mark Feuer  
Department of Engineering Science and Physics

We have designed and built a self-sustaining greenhouse controlled by an Arduino microprocessor. The system will check the conditions inside the greenhouse, such as light, humidity, temperature, and soil moisture sensors, and maintains optimal conditions for the plants inside by actuating grow lights, an exhaust fan, and a water system as needed. The user can set the desired environment by using a Bluetooth interface with a cell phone application. The system will also display current sensor data on the LCD display and can transmit the data via Bluetooth to the cell phone application. The device will also keep a log of the environment data and store it on a micro SD card for later analysis.

### **POSTER # 200**

#### **Mass Wasting Phenomena in Rectilinear and Meandering Channels – Research Experiences in Earth Sciences**

Sunny Chen, Tyra Williams

Faculty Mentor: Professor David Lindo-Atichati  
Department of Engineering Science and Physics

In this lab we performed an experiment to test what will cause more mass wasting: a straight channel or a meandering channel. We built two identical slopes and create one straight stream and one meandering stream. We filled each with sediments to see which channel took more sediment downstream. Our alternative hypothesis was that the meandering channel will cause more mass wasting.

To test our hypothesis we first sketched out our experiment. We drew four different views: 3d, top, front, and side. The length of the container we used was twenty-five inches, which we divided into two different sections.

This created twelve inches width, six inches in height, and each stream were three inches wide, with a six-inch delta. Secondly, we created two streams, one meandering and one straight using dirt, sand, rocks, and chopsticks.

Finally, we conducted our experiment using three hundred milliliters of water for each streams. We measured the debris that travelled downstream into the delta using a triple beam scale.

The straight stream produced 29.4 grams of debris compared to the meandering stream's 12.8 grams of debris. These results indicate that meandering streams produce less mass wasting. Therefore, our alternative hypothesis was not correct. We believe that the reason as to why the straight stream produced more mass wasting was because it ran faster than the meandering stream, which was slow down by its curvy features. This is in agreement with the theory learnt in class; when we have a meander we always find a region where there are low fluid velocities and therefore deposition of sediments.

In conclusion, the experiment was a success to re-think our hypothesis. We learned about mass wasting with a hands-on lab. This lab allowed us to build a mountain from scratch, add in streams, and measure the results. Most important, we were able to do research following the entire pathway of the scientific method.

### **POSTER # 144**

#### **Satellite Design Project - ROBBINS-1 Satellite Mission SUBSYSTEM TEAM - Electrical Power Systems**

Valjeta Demirovic, Danaelle Bonheur

Faculty Mentor: Professor Dwight Richards  
Department of Engineering Science and Physics

Many colleges and universities throughout the country are currently providing low cost access to space science research for their research faculty and students by initiating Cubesat programs. Cubesats are 10 cm square, 1.33 kg satellites that are launched as secondary payloads. This results in the cost per launch being significantly less than their traditional counterparts, which launch as primary payloads. In addition, over the last 10 years Cubesat technology has advanced to the point where significant science missions can be flown onboard them. NASA even has plans to send Cubesats to other planets in future years.

The goal of the ROBBINS space science research program is to assist interested College of Staten Island research faculty by providing them with a Cubesat program to advance their own research. The first mission called ROBBINS-1 is scheduled to launch the first quarter of 2017. In order to achieve this, CSI engineering and physics majors are collaborating with CSI faculty from the fields of Engineering, Mathematics, Computer Science, Physics, and Oceanography to engineer the core hardware and software components for the ROBBINS-1 mission. Here we present a prototype of the Satellite power plant typically referred to in the Cubesat industry as the Electrical Power System (EPS). It generates and stores power for all the satellite subsystems, and provides a means to regulate power consumption when the satellite is on the dark side of the planet, where its solar panels are unable to produce energy.

The prototype has been successfully tested and the next stage is to implement the EPS prototype with radiation hardened components in the aluminum Cubesat structure.

**POSTER # 18****The Comfort Zone: An Automated Climate Control System**

Stephanie Finnegan, Rachel Revzin

Faculty Mentor: Professor Dwight Richards  
Department of Engineering Science and Physics

The “Comfort Zone” is an automated climate control system that is designed to provide customers with an inexpensive option to transform an old manual air conditioner/fan into an automated device without having to replace the whole unit. The idea is that users can purchase the automated climate control system and easily retrofit it to their existing manual air conditioner/fan control knobs. This system is ideal for a variety of customers such as, pet owners who want to keep their pets in a suitable environment, tenants who don’t want to spend money updating climate systems in a dwelling they don’t own, and businesses that need to regulate the temperature of their offices when no one is there. It utilizes a temperature sensor to determine if the room temperature is above a user-defined maximum temperature. If the temperature is above this preset maximum, then the system will turn the control knob on the AC/fan unit so that the unit is on. When the temperature reaches 5 degrees below the preset maximum, the system will turn the control knob on the AC/fan unit so that the unit is off. Additionally, every time the fan is turned on/off by the system, the user will be sent a text message to alert them. The activity history of the automated climate control unit is also stored on a micro-SD card so that it can be used for future system maintenance.

**POSTER # 20****Automated Parking Garage Tracker**

Daniel Fontana (Macaulay Honors College),  
Tyler Franco (Macaulay Honors College)

Faculty Mentor: Professor Chang-Min Kim  
Department of Engineering Science and Physics

Searching for parking can often times be difficult and time consuming, especially in New York City. That is why my partner and I are creating the Automated Parking Garage System. This project will make the process of finding a parking space in a crowded parking garage much quicker and simpler. By utilizing an Arduino and RFID technology we will develop a program which will automatically track the influx of traffic into a parking garage and provide incoming drivers with the exact location of an available parking space. Furthermore, by using a GSM shield this system will be compatible with text messages for the user’s convenience.

### **POSTER # 1 2 1**

#### **The Linear Damped Quantum Harmonic Oscillator**

Karl Francis

Faculty Mentor: Professor William Schreiber  
Department of Engineering Science and Physics

The Bateman [1] Caldirola [2] Kanai [3] Hamiltonian leads to a Heisenberg equation of motion for a linearly damped quantum harmonic oscillator similar to that of the corresponding classical oscillator. The relevant time dependent Heisenberg operator expressions have been derived [4], yielding an expression for the Heisenberg energy operator  $E(t)$ . Correspondingly, for initial states  $\Psi_n$ , one can obtain the time dependent expectation value of the decaying energy  $E(t)_n$ . These different initial ( $t=0$ ) states will be considered, i.e. a harmonic oscillator  $n$ th state of frequency  $\omega_0$ , a pseudo-stationary  $n$ th state [5], and a harmonic oscillator  $n$ th state of frequency  $\omega = (\omega_0^2 - 1/4\tau^2)^{1/2}$  (time constant  $\tau$ ) [6]. The physical situation and/or the measurement method employed will determine the appropriate initial state. The resulting energy expressions will be compared, and each will also be compared with the classical decaying energy expression  $E(t)$ . The average decaying energy for mixed initial quantum states of each of the above three types will also be considered. A method for time averaging of the respective above results will be developed.

### **POSTER # 1 5 6**

#### **Partial Volume Segmentation of Brain MR Images**

Tyler Franco (Macaulay Honors College), Daniel Fontana (Macaulay Honors College)

Faculty Mentor: Professor Lihong Connie Li  
Department of Engineering Science and Physics

Image segmentation plays an important role in medical image processing, especially in quantitative analysis and visualization of different brain tissues. In the past decades, many segmentation methods have been proposed.

However, most of them belong to the category of hard segmentation, in which each voxel is classified as a single tissue type. Due to the limited spatial resolution of the Magnetic Resonance (MR) imaging devices and the complex anatomical structure of brain tissues, there are frequently some voxels along tissue boundaries that contain not only one tissue type, but rather a mixture of two or more tissue types. This is called partial volume

(PV) effect. In this study, we propose a more accurate PV model for segmentation of brain MR images. Digital phantom of brain MR images were used to test the proposed framework. Results demonstrated that the new PV segmentation method can greatly improve the performance.

**POSTER # 63****Biketronics: An Automatic Gear Shifting Bike**

Kevin Geocos, Jeffrey Li

Faculty Mentor: Professor Dwight Richards  
Department of Engineering Science and Physics

We have developed a device called Biketronics that, when attached to a bicycle, allows it to shift gears electronically. Shifting gears appropriately allows the rider to travel at a wide range of speeds while maintaining a nearly-constant pedal cadence for efficiency and comfort.

When pedaling, Biketronics takes the speed you are currently pedaling at and, through use of an Arduino microcontroller, will determine whether to shift to another gear. A servomotor attached to the rear derailleur actuates the electronic shift, requiring no input from the rider. The system recognizes when the rider is coasting or the bicycle is stationary to avoid inappropriate shifts.

In addition, the Biketronics system also offers manual shifting through the use of pushbuttons. This allows the user full control of the system similar to normal operation of a bicycle. Through use of this product, we hope to get more people interested in bicycling by eliminating the learning curve for geared systems.

**POSTER # 147****Spatially Resolved Stellar Population of Nearby Post-starburst Galaxies in SDSS-IV MaNGA**

Andrea Gonzalez (The Verrazano School)

Faculty Mentor: Professor Charles Liu  
Department of Engineering Science and Physics

We have selected five galaxies in the Mapping Nearby Galaxies at APO (MaNGA) project of the latest generation of the Sloan Digital Sky Survey (SDSS-IV) identified as post-starburst (E+A) systems, in the transition between "blue cloud" and "red sequence" galaxies. We measure the equivalent widths of the Balmer series, D4000 break, and metal lines across each galaxy, and produce maps of the stellar age, stellar mass, and metallicities of each galaxy using FIREFLY, a full spectral analysis code. We have found that the measured properties of the galaxies overall generally matches well with single-aperture SDSS spectra from which the original post-starburst identifications were made. The variation in the spatial distributions of the stellar populations, in particular the A- stars, give us insight into the details of the transitional E+A star formation-quenching phase.

### **POSTER # 21**

#### **Perendev Motor Mythbusters**

Michael Matteo (Macaulay Honors College)

Faculty Mentor: Professor Chang-Min Kim  
Department of Engineering Science and Physics

Magnet powered free energy motors are currently being researched and developed. For years, people have tried to prove that it works. Many scams and cases of fraud and embezzlement have ensued from this claim. Some claim that free infinite energy is fact while others have claimed that it breaks the laws of physics and is impossible. There's also a huge conflict between those who argue on what the motor is actually doing. In the end, someone has to step in and find the truth. What I have done is looked through all the replications of the past attempts at perfecting the Perendev motor in order to optimize my own original design based off of what did and did not work in the past. Using my built design, I will test the theory.

Doing so got down to the truth behind this theory. In the end however, I was successfully able to build an optimized scale model of a Perendev magnet motor but it did not work. It's not because of a flaw in my design but rather the theory itself. It's clear that the theory is at flaw because the design ignores the opposing charge of the magnets and is a flawed attempt at blocking out or ignoring the fact that magnets have two poles that equally oppose and attract one another. Even magnetic shielding cannot eliminate the always-opposing force of the opposite pole of a magnet.

### **POSTER # 81**

#### **Improved Data Collection and Attitude Determination and Control**

Jose Ramirez-Garofalo, Tanya Vasyleva, Nick DeVitto

Faculty Mentor: Professors Irving Robbins and Dwight Richards  
Department of Engineering Science and Physics

The team's goal is to design a ground station prototype, capable of proportionately distributing power to each subsystem. We designed our system using Python IDE for a Linux operating system. Once launched, the ground station will interface and distribute power to the other CubeSat

(Satellite) subsystems. The energy generation, control, and distribution functions performed by the ground station will provide a means to store the energy within the Satellite's solar panels as they are positioned on the side of the Earth illuminated by the Sun. This stored energy will become the power source for the CubeSat's ground station, as it travels around the dark side of the planet. Without the ground station, the CubeSat would exhaust all its energy reserves before the ground station emerges from the dark side of the planet, rendering it useless for the remainder of the mission.

**POSTER # 71****Geochemistry of Accretionary Wedge Pore Fluids**

Sam Rubin

Faculty Mentor: Professor Jane Alexander  
Department of Engineering Science and Physics

Geochemistry of Accretionary Wedge Pore Fluids  
The Ocean Drilling Program (ODP), was an international cooperative effort to study the composition and structure of the Earth's ocean basins. It began in 1985 and drilled cores from all over the planet, including several accretionary wedges associated with subduction zones. An accretionary wedge is the collection of sediments that has settled on the subducting plate, and forms into a pile when the plates converge.

The two main areas of focus are Barbados and Nankai, Japan. In Barbados the Legs (expeditions) used are Legs 110 and 156. In Nankai, Legs 131, 190, 315, and 316. Altogether they contain a total of 17 sites that are useful for this research. The ODP measured the concentrations of the ions in the pore fluids, and that data is the foundation of this project. The concentrations of magnesium, calcium, sulfate, chlorine and sodium are plotted against depth. This work tests a model designed to predict the magnesium and calcium values, based on the concentrations of other ions.

Since the model formulae were derived using data from a site in Leg 110, the model fits the best in that area. However in other Legs the fit is not as good as it is in Barbados, which means it mimics the actual values but there is an offset. The Nankai sites tend to diverge from the normal trend when they cross the boundary of the clay mineral diagenesis that is nearby.

The diagenesis causes the predicted values to drastically become less accurate when compared to the actual values. This means that the model in Nankai does not work in the area where the diagenesis has been documented.

In addition we found that predicted values near the surface of Barbados sites are affected by abnormal variations in measured sulfate concentrations. The abnormalities are due to organic sulfate production caused by micro-organisms, and the organic sulfate reacts differently than inorganic sulfate.

**DEPARTMENT OF ENGLISH/LINGUISTICS**

CONFERENCE LOCATION: UPSTAIRS WALKWAY

**POSTER # 101****An Acoustic Analysis of the Effects of Bilingualism on Diminishing Final Devoicing in Bulgarian**

Frank Bonadonna

Faculty Mentor: Professor Jason Bishop  
Department of English/Linguistics

"Final devoicing" is a phonological process present in many languages whereby obstruent consonants that are voiced (i.e., produced with vocal fold vibration) are pronounced as voiceless at the end of words. For example, word-final consonants such as /b, d, g, z, v/, which are voiced, and /p, t, k, s, f/, which are voiceless. In the present study, we explore how bilingualism influences this process. The hypothesis is that proficiency in a second language without final devoicing may diminish the extent of the final devoicing in a language with final devoicing. That is, a person's second language can influence their native language systematically.

Specifically, we acoustically analyze speech from native-speakers of Bulgarian (a language with final devoicing) who either speak or do not speak English (a language without final devoicing), looking for evidence of diminished final devoicing in Bulgarian-English bilinguals.

### **POSTER # 55**

#### **Predicting Prosody Perception from Autistic Traits: A Look at Three Measures**

Juliana Colon

Faculty Mentor: Professor Jason Bishop  
Department of English/Linguistics

Prosody, or speech rhythm and melody, is known to be among the key language related deficits associated with autism spectrum conditions. The present study employed an individual differences approach to this issue, exploring the extent to which three different measures of autistic traits in neurotypical adults predicted the perception of linguistic prosody. We found two particular measures, namely the Autism Spectrum Quotient and The Reading the Mind in the Eyes Test, to strongly predict a sensitivity to prominence (accentuation), but not to prosodic boundaries (pausing).

### **POSTER # 50**

#### **Prosodic Correlates of Autistic Traits in Speech Production**

Jessica Spensieri (The Verrazano School)

Faculty Mentor: Professor Jason Bishop  
Department of English/Linguistics

Recent evidence has shown that there is a relation between autistic-like personality traits in the neurotypical population (such as poor communication skills, poor social skills, and over-attention to detail) and the perception of speech prosody. In particular, individuals with more autistic traits (as determined using standard measures) have difficulty perceiving some aspects of prosody, especially the use of prominence—stress/accentuation. In the present study, we attempt to determine whether autistic traits similarly predict differences in the production of prosody in a group of neurotypical English speakers.



**POSTER # 119**

**The Phonetics and Phonology of Polish**

Tara Weiburg (The Verrazano School)

Faculty Mentor: Professor Jason Bishop  
Department of English/Linguistics

This study, based on a course project in Speech Science, is a description of the linguistic sound system of Polish. Discussion of the phonetics (articulation, acoustics) as well as a summary of phonological processes (patterning) in the language are provided, examining both consonants and vowels. We also compare the speech of one native speaker of the language with previous linguistic descriptions of Standard Polish.

**POSTER # 54**

**The Role of Verbal Working Memory in Predicting Explicit and Implicit Prosody**

Nadia Zaki

Faculty Mentor: Professor Jason Bishop  
Department of English/Linguistics

Prominent theories in psycholinguistics relate verbal working memory capacity to both spoken and “implicit” (i.e., sub-vocal, generated in silent reading) pauses, such that lower working memory predicts a greater use of pauses. This evidence has come primarily from sentence processing results examining the resolution of ambiguities. In the present study, we attempt to validate these claims using an individual differences approach applied to both overtly-produced and silently-read speech.

**DEPARTMENT OF MANAGEMENT**

CONFERENCE LOCATION: WEST LOUNGE

**POSTER # 5**

**Corporate Social Responsibility in Healthcare: Medicine for Profit or People?**

Shumaila Irshad (Macaulay Honors College)

Faculty Mentor: Professor Deepa Aravind  
Department of Management

This research investigates the lack of corporate social responsibility (CSR) evident in the healthcare sector. This is a conceptual paper that follows an analytical and interdisciplinary approach on arguments from business ethics, management, law, human rights, and public health. The fallouts from major companies such as Enron, WorldCom, and HealthSouth altered the shape of the entire business sector forcing legislations such as Sarbanes-Oxley Act of 2002 to be put into place to prevent future catastrophes. Yet there has not been enough investigation into corporate practices in the healthcare sector, and as a result, we can see through a multitude of findings how the sector lacks legislation. Fraud in the American health care system has taken on many forms from pharmaceutical manufacturers to major hospitals. As a result, patients are the ones to suffer the consequences. This paper aims to understand corporate social responsibility in the context of healthcare, and evidence of its absence thereof. The paper will follow the manufacturing and distribution process of drugs from pharmaceutical companies to its administration in hospitals in an effort to expose the lack of CSR practices evident throughout the sector. For a more balanced perspective, positive CSR efforts that have brought significant change will be analyzed as well.

**POSTER # 75**

**Does Active Learning Increase When Students Play Games Based on Popular TV Shows and If So, Why?**

Anthony Morelli

Faculty Mentor: Professor Heidi Bertels  
Department of Management

Given the pervasiveness of technology in our lives and the expanding possibilities of using technology in education, educators are facing a choice of instructional formats they never had before. Whereas teachers a generation ago were limited to the usage of lectures and overhead projectors, instructors today have the ability to include a range of relevant technologies to enhance their teaching. Modern teaching approaches enable instructors to “not only profess a knowledge base but to also effectively facilitate learning.” (Sarason & Banbury, 2004) This paper focuses on the usage of technology in teaching and more specifically the integration of games based on popular TV shows in the classroom. This research uses active learning theory to hypothesize that games positively affect students’ understanding of subject matter. We provide a test of this hypothesis and further investigate whether any increase in subject matter understanding is related to students’ perception of engagement with the material or participation in class. We combine a pre-test post-test design with survey questions to answer our research questions.

**DEPARTMENT OF MARKETING**

CONFERENCE LOCATION: WEST LOUNGE

**POSTER # 173****The Dark Side of Globalization:  
The Case of Jamaica**

Sabrina Arminante

Faculty Mentor: Professor Alan Zimmerman  
Department of Marketing

According to Thomas Friedman "Globalization is the integration of markets, nation-states, and technologies in a way that is enabling individuals and corporations to reach around the world farther, faster, deeper and cheaper than ever before." Globalization was the platform that was going to raise the living standards for poor and rich countries alike. Experts identified the benefits as greater wealth, more exports, more jobs, and introduction to competitive markets.

Jamaica is a developing country that was introduced to this concept. Finding themselves in debt, they turned to one of the key institutions implementing globalization, The International Monetary Fund (IMF), for help. The IMF applied its standard formula to Jamaica as a condition of granting the loan. The IMF believes in austerity, currency devaluation, and lowering wages to reduce inflation by balancing a nation's loan repayments and imports with its export earnings. The loan was supposed to integrate Jamaica's economy into the world market, but, because of the actions of other players in the global economy, the country was never able to obtain the amount of foreign currency needed to meet interest payments. The policies implemented with the loans had a negative impact on the vast majority of Jamaican citizens. The country paid out more financial resources than it received while it saw greater poverty, higher unemployment rates, labor abuse, income inequality, environmental degradation and domination by multinational corporations.

Drawing on existing research from the Bureau of Economic Analysis, The International Monetary Fund, and other sources, this paper will gather calculable data to show that globalization and the policies of The IMF had very negative effects on Jamaica leading the country into financial crisis and debt of over \$1 billion dollars.

**POSTER # 145****The New Trend in Sales  
Strategy: The SDR Model**

Victor Brown

Faculty Mentor: Professor Alan Zimmerman  
Department of Marketing

Sales is the lifeblood of any organization. Companies continuously seek to improve the efficiency and effectiveness of their sales teams. While there is no "one size fits all," more and more sales organizations are moving to a new model called the Sales Development Representative (SDR) model. The purpose of this paper is to define the SDR model, prescribe how to structure it, to show how to properly implement it.

The never-ending debate among sales leaders has always been the question of "inside" versus "outside" sales. Many organizations employ both channels while others focus on just one. Based on 19 years of personal experience in both types of companies I have become very interested in this debate. There are pros and cons to each type which will be explored in this paper. In recent years however, sales organizations are moving to the new SDR model. This model introduces a new role called the Sales Development Rep. With this new role comes an entirely new sales process which creates many issues which need to be resolved. These issues revolve around hiring profiles, reporting metrics, compensation, sales lead/call list generation, pre-sales activities, sales process, reporting, and organization chart structure. I will interview sales leaders and gain an understanding of how they measure the success of this change in sales approach.

### **POSTER # 129**

#### **Greek Shipping Industry**

Andreas Chamberas

Faculty Mentor: Professor Alan Zimmerman  
Department of Marketing

Greek Shipping Industry: history, current state, role in the Global and Greek economy “ A recent study from Eurobank concludes that the global maritime industry accounts for 80% of global trade by volume. The Greek-controlled fleet (i.e. vessels whose owners are Greek citizens, regardless of the flag of the vessel) is ranked first globally regarding international merchant fleet capacities, accounting for 17% of the world's total transport capacity. Greece maintains the largest shipping fleet in the world, outpacing China, Japan, and the United States in 2015. The Greek shipping industry is responsible for over 300,000 jobs in Greece. The maritime industry in Greece dates back to antiquity. For thousands of years, Greeks travelled the open seas of the known world and were paramount in global trade. There are many reasons that propelled Greece into a leader in global shipping; one of them was the building and the history of the Corinth canal, a project and dream that took centuries to complete and a story of economic triumph against overwhelming odds.

It appears based on extensive research that Greece will continue to dominate the open seas of the world in a very competitive industry for years to come despite domestic economic stagnation and fierce competition from China.

Based on research with an extensive industry analysis, analysis on the threats, opportunities, history and weaknesses of the Greek maritime shipping industry, a summary of the global shipping industry, it appears that the significance of Greek shipping in the Greek economy is immense. If the Greek shipping industry continues to thrive when the Greek economy stabilizes and returns to growth it can be said that, the shipping industry will be an important pillar of the Greek and Global economy for many years to come.

### **POSTER # 8**

#### **The Economic Recovery from the Post-Election of 2010-2011 Crises in Ivory Coast**

Salematou Keita

Faculty Mentor: Professor Daniel Gagliardi  
Department of Marketing

Ivory Coast is located in West Africa between Ghana and Liberia.

The main global issue of Ivory Coast 2010-11 crisis was a political crisis.

Political factors are very crucial for the economy outcome. President Laurent Gbagbo and opposition Candidate Alassane Ouattara and a number of countries, organizations and leaders worldwide claimed Ouattara had won the election. But Gbagbo refused to accept that. The situation became violent and turned the country into civil war that led environmental catastrophes.

Lives, farms and businesses were destroyed.

Through the help of the international community, including the United Nations, the African Union, the Economic Community of West African States, the European Union, the United States, and former colonial power France have affirmed their support for Ouattara, who is universally acknowledged to have defeated Gbagbo and called for Gbagbo to step down. As the political environment stabilized, less than five years Ivory Coast has made economy progress towards improving the condition for sustainable development. Such as giving poverty reduction by increasing employment through major public works projects, ensuring higher prices for farmers to protect market share, reduction of multilateral debts, Improvement of the business environment to attract foreign investors, and growth in the real GDP. Based on the facts above I plan to write my paper on Election Conflict leading to government instability. This instability leads to the loss of lives, homes, businesses and jobs. Fortunately with the help of the U.N. and the French the country has gradually returned to stability which has led to rapid growth in GDP, net exports, and a decrease in public debt.

**POSTER # 165****Breaking Down Barriers:  
Intercultural Communication in  
a Globalized Economy**

Veronica Averyl LaManna (The  
Verrazano School)

Faculty Mentor: Professor Alan Zimmerman  
Department of Marketing

Contemporary business organizations are becoming more globalized through access to new technologies and international opportunities. As a result, they seek to increase their FDI, or foreign direct investments, to maximize profits and to expand their market share, but often fail when they venture abroad. The main reason for such failure is lack of research concerning the foreign market and the foreign consumers. If companies are willing to spend money to go abroad and take a risk, why are they not sufficiently researching the culture of the foreign market? When a company fails to research the target market, they often make mistakes that cost them money and negatively impact their reputation. A prominent example of a global company is McDonald's, which has been successful abroad because it has allocated its resources to understand its foreign markets. It has also made costly mistakes, such as offering products that don't appeal to consumers.

To overcome this McDonald's now offers fast food items that correspond to local tastes. As existing research on this topic shows, there is a relationship between intercultural communication and international business.

In this research project I aim to understand the benefits of cultural awareness for businesses and explore the most efficient ways to teach such awareness to students, employees and entrepreneurs.

**POSTER # 137****Cloud Security and Privacy  
Models**

Frank Lennon

Faculty Mentor: Professor Soon Ae Chun  
Department of Marketing

Security and privacy issues are considered as key factors to take into account for migration to the Cloud. The main security challenges, requirements and barriers in the cloudification of services has been related to: data protection and compliance, interoperability and data portability, identity and access management, auditing, adaptability and availability, as well as risk management and detailed security SLA formalization. On the provider side, the Cloud Service Providers (CSPs) are also challenged with adhering to geo-political regulations and requirements.

We investigate how the CSPs are evolving to address meeting the globally diverse regulations and requirements, the existing "geographical" security requirements and laws, monitoring and adapting to comply with the various customer's home office's regulatory requirements, while spanning political and geographical boundaries.

Specifically, we present the Secure Cloud Model that relates to the notion of "security framework" as a conceptual structure intended to serve as a support or guide for the creation of a secure information system. The intention of the proposed security framework is to serve as a comprehensive guideline for the creation, deployment, assessment and improvement of a Secure Cloud Model. The adopted methodology allows organizations to characterize cloud migration and provisions from different security angles (e.g. evolving requirements, audit certifications, SLAs and contracts), while considering relevant security challenges (e.g., resilience, portability, continuous monitoring, and access control). We present emerging security tools from a few vendors, various frameworks, models and protocols that provide the consumer with an ability to verify, monitor and ensure compliance on storing and processing digital assets on the Cloud environment.

### POSTER # 138

#### **Supporting Off-label Prescription Hypotheses**

Dennis Shpits

Faculty Mentor: Professor Soon Ae Chun,  
Paolo Cappellari  
Department of Marketing

Identifying whether a drug can be prescribed for conditions that are not approved by the FDA is a challenging task. There are multiple issues to be considered, including drug safety, drug efficacy, legal liability, ethics, as well as potential damage to a care provider's reputation and even the loss of medical licenses. Generally, doctors may consider a drug or a novel combination of drugs for off-label prescription only after a scientific paper shows some efficacy of the off-label use. Physicians are under extreme pressure to mold into a computationally advanced society to provide novelty cures. Alternative treatments, or "Off-Label Prescription", has been a very active area of research and development in the health sciences.

In this research, we use patient generated health data on the social media platforms are utilized to identify the off-label drug uses. We developed a intelligent computer tool called Health Reasoner that will aid clinicians in exploring and reasoning alternative treatments. This computational tool is unlike any current technology because it explores a semantic repository (Big Data) of user-generated social healthcare data and performs reasoning analysis to compare and contrast treatments that might have been otherwise unknown to the User.

Our semantic repository is in the form of linked data, also known as Resource Description Framework. By utilizing an Application Program Interface called Jena, we were able to construct a Java Graphical User Interface that queried the data in Jena and performed analytics and reasoning based on the Users performed actions. Treatments that are considered "Off-Label" can be ranked by common purposes with the direct treatments for a condition or by the number of patients who report using the treatments. Two selected treatments can be compared side-by-side.

Furthermore a User can explore the discovery process in two different analytical ways- starting with a condition or treatment.

### POSTER # 48

#### **Trading Counterfeit Goods in China and the U.S: Beneficial or Harmful?**

Luyao Zheng

Faculty Mentor: Professor Alan Zimmerman  
Department of Marketing

The widespread scale of counterfeit goods has contributed to the economic growth in China. However, it has caused substantial economic loss and unemployment in the U.S. This research project utilizes library databases, peer-reviewed journals, and online resources in order to study: the reasons for the growing counterfeit market in China, how supply and demand encourage counterfeit trading, and how this affects the business relationship between China and the U.S. While China does have sufficient legislations established to restrain IPR (intellectual property rights) infringements, weak enforcement remains a problem due to local protectionism and inadequate punishment.

Counterfeit goods are purchased by aware consumers buying counterfeit products to save money, or unaware consumers who are unconscious of buying fake goods. Purchasing counterfeit goods is not a crime in most countries, but it is an ethical issue regarding consumer complicity for their affordability and attitudes. It is important to create a healthy fair trade environment for local and international businesses, consumer protection, and positive economic growth. My findings reveal that counterfeit goods not only jeopardize public health and safety, but also destroy businesses profit, consumer trust, and brand value.

## DEPARTMENT OF MATHEMATICS

CONFERENCE LOCATION: BOTTOM FRONT

### POSTER # 157

#### Symmetries of Things

Alessia Colonna

Faculty Mentor: Professor Deborah Franzblau  
Department of Mathematics

Symmetry exists everywhere we look, in the patterns of brick walls, sports balls, frieze sculptures, and even car hubcaps.

A symmetry of a pattern is an operation, such as a rotation (turning) or reflection (mirror image) that leaves the pattern unchanged. In this project I am studying the new method of John Conway, et al., for classifying and counting symmetries, based on topology and geometry, which has given me a deeper understanding of patterns.

I give some classic results on classifying symmetries of different pattern types, such as rosettes.

Using the "Magic Theorem", I explain how to find the symmetry signature of an infinite 2D wallpaper pattern, using mirror lines and gyrations (rotations), and discuss why there are only 17 possible signatures.

### POSTER # 136

#### Patterns in Rubik's Cube

Almira Duka (Macaulay Honors College)

Faculty Mentor: Professor Deborah Franzblau  
Department of Mathematics

The Rubik's Cube is a popular three-dimensional puzzle composed of 6 large faces, each divided into 9 colored facets glued onto 26 smaller cubes, also known as "cubies." Initially the facets on each cube face all have the same color (6 colors total), but the cubies are then permuted. The goal is to rotate faces of the (large) cube until the cubies are in the correct position along with the correct color orientation. There are over 43 quintillion possible arrangements or permutations.

In this presentation, I explore the basic algorithms used to solve the cube and the patterns within these algorithms. Most algorithms turn out to be composed of combinations of commutators and conjugates. Commutators are moves with the pattern  $(A B A' B')$ , where A and B are sequences of one or more rotations of the cube, and A' and B' are the respective inverses of those rotations. Conjugates are moves with the pattern  $(A B A')$ , where A and B are sequences of different rotations and A' is the inverse of the rotations of A. I will focus on explaining why these moves are useful, by mapping the movement, position, and orientation, of the cubies. For example, I will show that commutators made of adjacent rotations have order 6 (have no effect when repeated 6 times). I will also report on additional observations for future research.

### **POSTER # 128**

#### **Counting and Burnside's Lemma**

Martin Lapinski (Macaulay Honors College)

Faculty Mentor: Professor Deborah Franzblau  
Department of Mathematics

An important problem in mathematics, which arises in probability, chemistry, and other fields, is listing and counting patterns. As a simple example, consider a square where each edge can be either black or white, represented by a sequence such as BBBB or BWB. If the patterns are all considered different, there are 16 total. However, if patterns are considered equivalent when the square is rotated or reflected, there are only 6 different arrangements: BBBB, BBBW, BBWW, BWBW, WWWW, WWWW. If the total number of patterns is small, the number can be found by listing, but when the patterns are more complex, for example by increasing the number of colors, or by changing the meaning of "equivalent", mathematical tools are needed. Burnside's Lemma from Group theory (the mathematics of symmetry) gives a fundamental counting method: it says that the number of different arrangements is the average number of patterns unchanged by each of the allowable "moves" (such as rotation). In this project, I explain how and why Burnside's Lemma works, and illustrate it with examples. I then discuss the application of the Lemma to infinite patterns.

#### **DEPARTMENT OF MEDIA CULTURE**

CONFERENCE LOCATION EAST LOUNGE

### **POSTER # 76**

#### **The Role of Women Producers in Contemporary Television**

Kristine Carrano (The Verrazano School)

Faculty Mentor: Professor Tara Mateik  
Department of Media Culture

My research examines the changing roles of women in media, focusing on contemporary television. Beginning with influential trailblazers such as Tina Fey and Amy Poehler and branching outward, I examine the impact of female producers on social and political movements that aid female empowerment. I also address the lack of female presence within media production, which furthers the importance of the women currently paving the way for future inclusion. By studying numerous television series, academic journals, and popular sources (such as Variety, Hollywood Reporter, The Wall Street Journal, etc). I gather evidence in order to further understand the connections within the production industry to political influence. Series I will be looking at include Saturday Night Live, 30 Rock, Parks and Recreation, Girls, Scandal and Broad City. Saturday Night Live, Parks and Recreation, and Scandal all have female writers that have created and enacted strong women in political positions. 30 Rock, Girls, and Broad City have underlying feminist elements and all have female writers and producers.

The link between women creators of media and strong feminist influence are interrelated. The prominence of female producers ranges from further availability to women's inclusion in creating media to strong political and social influence, as well as enjoyment from being properly represented.



**POSTER # 2**

**The Journey of Journalism**

Nicole DeRosa (The Verrazano School)

Faculty Mentor: Professor Christopher Anderson

Department of Media Culture

My project will look further into my internship at the Staten Island Advance and how their use of technology has kept their news product relevant and current. The Staten Island Advance recently changed the flow of work in the news room, focusing on their web product instead of their paper product. They also have renovated their website to include popular features, like videos and galleries. I will examine further how this change was necessary and important to keeping the Advance in line with recent changes in the news business. I want to include all my observations of what worked, what didn't and what could be further improved for not only the Advance's newsrooms but for newsroom in general.

**POSTER # 99**

**Understanding the Emerging Relationships between Streaming Services and Touring within the Music Industry**

Catherine Hunter (The Verrazano School)

Faculty Mentor: Professor Reece Peck  
Department of Media Culture

Music streaming services have been on the rise for the past decade. This has created uncertainties about the impact these services will have on the recording industry and the music industry overall. This presentation explores how these websites and their applications could be beneficial to not only the music labels and recording companies, but also to smaller players in the music industry such as independent artists. Music streaming services offer various online tools that artists can use to disseminate and promote their music. Particularly, this project examines how the promotional strategies related to touring are becoming more and more integrated with these music streaming services. This presentation analyzes the trend in success rates of touring in correlation to the artists' presence on music streaming services such as Spotify. This study draws upon academic literature and trade magazines, and uses statistical data from online and industry-based reports.

### **POSTER # 64**

#### **The *Playboy* Bachelor: Origins and Evolution of the Male Market**

Victoria Manzo (The Verrazano School)

Faculty Mentor: Professor Reece Peck  
Department of Media Culture

The beginnings of the male market arose with sexy desires for wealth and power during the post-World War II economic boom. This paper will explore the cultural and historical origins of *Playboy* magazine during the Creative Revolution. It will study how Hugh Hefner built his brand, connecting the role of the hedonistic “bachelor” to the ideologies of capitalistic and materialistic endeavors of upward mobility and the “American Dream.” The research will examine the changing gender roles of women before and after the War, which conceivably led to the male quest to maintain power and authority through female sexual objectification. The paper will compare *Playboy*, to its descendant Maxim, and will investigate the ways in which it is adapting to stay in business, despite pornography, and satisfy a new male culture that embraces metrosexuality.

### **POSTER # 207**

#### **Illustrator Replica: Emulating the Designs of Failed Banks**

Chigozie Okoye

Faculty Mentor: Professor Michael  
Mandiberg  
Department of Media Culture

My presentation *Illustrator Replica: Recreating the Designs of Failed Banks* will showcase the work I've done for close to a year with Professor Mandiberg recreating the logos of failed banks and what I've learned in the process. My presentation will present the original low resolution logos of the failed banks, alongside my exact vector replications of the original logos. Through these comparisons, I will explore the workflow for creating these graphics.

**POSTER # 53**

**The Net Neutrality Debate**

Jennifer Pierce (The Verrazano School)

Faculty Mentor: Professor Cindy Wong  
Department of Media Culture

Because the Internet plays a significant role in advancing democracy and offering equal participation of all, net neutrality is one of the most important debates in the United States today. This research paper contextualizes the history of net neutrality, focusing on two major arguments between those in favor and those opposing FCC government intervention of Internet service providers: the right of free speech of corporations vs the public, and whether or not broadband Internet should be classified as an information or telecommunications service.

**POSTER # 7**

**How Is Native Advertising Changing News Credibility?**

Crystal Warner

Faculty Mentor: Professor Reece Peck  
Department of Media Culture

The emergence of digital technologies has transformed journalism. These technologies enhance the information gathering ability of journalists but they have also made the news industry more competitive and financially uncertain. Many news organizations are finding it hard to keep up with the

24 hour news cycle and cover their overhead costs with conventional business models. Media organizations are grappling with the realization that forms such as display advertising are no longer profitable. Increasingly, news outlets are turning to a new source of advertising-based revenue called "native advertising." Native advertising is a form of corporate sponsored content that is placed in newspapers and news websites and takes on the appearance and shape of news articles. While this marketing technique is highly profitable, it blurs longstanding lines that have been established to separate news and advertising, in the effort to keep news unprejudiced.

Now, corporations no longer need to use PR professionals to pitch to journalists and earn coverage for their organizations. They can simply buy a spot and place media that mimics what is around it. However, is native advertising truly changing the public's attitude about the credibility of modern journalism? In this presentation, I will examine online publications such as BuzzFeed, The Onion, and The Atlantic to exemplify how native advertising articles affects their news reporting and credibility in the eyes of their readership.

### **POSTER # 130**

#### **Designing a Memory**

Samayra Williams

Faculty Mentor: Professor Valerie Tevere  
Department of Media Culture

As a Design and Digital Media student at CSI, I was more than happy to work with my mentor, Professor Tevere, on the design materials for *Memory of a Time Twice Lived*, a concert film by Angel Nevarez and Valerie Tevere.

Working on this project gave me the experience I would need to move forward in my field while also teaching me creative problem solving skills needed when working with partners or clients. The materials created for *Memory of a Time Twice Lived* consists of a poster, program and postcard; all used to promote the concert featured in the film as well as the film itself. The poster and program lean more toward an antique feel, pulling inspiration from the concert's music as well as its setting, The Wagner Free Institute of Science in Philadelphia. As seen on the poster and program, specimen illustrations, intricate, and distressed serif typefaces were deliberately used to mirror the look of a Victorian era poster. The postcard though, does the complete opposite. It goes in a more modern direction with color photography and a sans serif typeface to mimic part of the film's time period, the present. These three pieces come together to create a dynamic project, showing hints of the past and parts of our present.

### **DEPARTMENT OF NURSING**

CONFERENCE LOCATION: WEST LOUNGE

### **POSTER # 120**

#### **Let's Talk about Sex: Promoting Safer Sex Practices to College Students**

Alysa Andrade (The Verrazano School)

Faculty Mentor: Professor Nora Maloney  
Department of Nursing

The purpose of this paper is to understand the role of the nurse in promoting safe sexual health within a college setting. Community health or public health nursing is a specialty field that may be practiced in any type of community setting, especially within college campuses. The college setting represents a unique population because it is a milestone in an individual's life. College is a place where individuals go in order to receive a higher education as well as set a lifelong career path. It is this stage of life that is characterized by gaining independence and for young individuals to explore their own sexual identities. A large proportion of college students in the United States are sexually active (Eisenberg, Lust, & Garcia, 2014). The exploration of sex and experimentation is part of a balanced lifestyle in an individual's life, yet society stigmatizes the subject as "private" or "dirty." These young college students tend not to have open discussions about sex or ask any questions regarding safer sex techniques. In fact, 60% of (college) institutions have either a campus-based health service or an established linkage with a community-based clinic, yet many students are not accessing the information they need to proactively protect their health (Lechner, Garcia, Frerich, Lust, & Eisenberg, 2013). Being under-educated and the inappropriate use of sexual protection can lead to serious health risks such as sexually transmitted infections and unplanned pregnancies. As registered professional nurses, it is within our role to educate these young adults in order to prevent illness and promote sexual health. This paper will explore the history of community health nursing, stereotypes of sexually active college students, current safe sexual practices, and best education of safe sex practices according to evidenced-based research.

**POSTER # 205**

**Breastfeeding Initiatives in the United States and Costa Rica**

Sonanika Chouhan (The Verrazano School)

Faculty Mentor: Professor Regina Lama  
Department of Nursing

After visiting a breastfeeding clinic in Costa Rica, I became interested about the process since it is stated to be highly promoted. According to Costa Rican law, six months of exclusive breastfeeding is essential unless medically excused (National Breastfeeding Commission Costa Rica, 2011). All mothers are instructed to breastfeed after delivering. In order to better implement this law, there are ten to twenty breastfeeding clinics in the country (Seguro Social, 2012). The clinics provide education for new mothers and those having trouble with breastfeeding. Education on how to breastfeed, how to tell when the baby is full, and basic nursing assessment for the baby including length and weight is conducted. Costa Rica is recorded to have the most peer support as well in central and South America (Pan American Health Organizations, 2013). La Leche League is one of the greatly supporting groups in Costa Rica to encourage breastfeeding.

Additionally, the media supports breastfeeding by advertising successful breast milk donations to mothers who cannot feed their babies (Bazell).

However, in 2011, only 33% of infants were exclusively breastfed in the first six months of life in Costa Rica and 19% in the United States (Global Health Observatory, 2011). In the United States, many hospitals are aiming to incorporate the Baby Friendly Initiative, where mothers can make informed decisions overall care, including breastfeeding, for their newborns. Why is that despite having support and education is breastfeeding statistically below 50% in Costa Rica? What makes the rate of breastfeeding higher in Costa Rica than in the United States? This paper discusses the significance of breastfeeding in the Costa Rican culture and the influences of the recorded statistics, and furthermore compared to breastfeeding in the United States.

**POSTER # 169**

**Issues Related to Palliative and Hospice Care**

Stephanie Clemente (The Verrazano School)

Faculty Mentor: Professor Barbara DiCicco-Bloom  
Department of Nursing

The differences between hospice and palliative care is misunderstood by numerous people including healthcare professionals, patients, their families as well as the general public. It is imperative to examine how these misconceptions permeate our understanding of end of life care and how they may influence the quality of patient care. The completion of a comprehensive literature review and interviews with faculty and administrators who are familiar with hospice and palliative programs helped to identify perceptions that have led to ambiguity about the difference between these two types of care. An ancestry approach utilizing the Institute of Medicine Report: Dying in America helped guide this literature review. Additionally, data from attendance at a nursing research conference in New York City was integrated into this project. The concepts of timeliness, culturally competent care, healthcare professional role differences as well as social and political implications for the provision of both palliative and hospice care were found to be relevant to our final analysis. The value of this project will contribute to identifying those aspects of the conceptual and practical ambiguity for hospice and palliative care that has undermined patient care quality.

### **POSTER # 170**

#### **Breast Cancer Screening**

Aldrich Gamboa, RN; Agatha Czarina DeMeo, RN; Marina Mironova, RN

Faculty Mentor: Professor June Como  
Department of Nursing

Breast cancer is a major problem in women's health as well as in men, although much less common. Breast cancer typically occurs in middle-aged women (ages 45-65) but it also accounts for 7% of all breast cancers in adolescent and young women. One in eight women will be diagnosed with breast cancer in their lifetime. According to Breast Cancer.org, white women are at a slightly higher risk than African Americans, Hispanics, and Asian women to develop breast cancer. Each year it is estimated that over 220,000 women in the United States will be diagnosed with breast cancer and more than 40,000 will die. Healthy People 2020 cancer objectives support monitoring trends in cancer incidence, mortality, and survival to better assess the progress made toward decreasing the burden of female breast cancer in the United States. Nursing's role is crucial in the screening process through the instruction of health promotion and breast cancer risk reduction strategies including early detection methods such as mammography and clinical exams. The goal of screening exams is to find abnormalities before they start to trigger symptoms and expand beyond the breast tissue. Breast tumors may also be prevented by reducing risk factors, such as cessation of smoking, increasing physical activity, reducing environmental exposure to chemicals and reducing ultraviolet light exposure. Breast cancer screening should include physical exams and annual mammograms starting at age 40 with appropriate follow up of abnormal test results through referral to oncologists. In addition to early detection, early screening reduces costs for treatments; the cost of early detection when a lesion is confined to the breast tissue compared to treatments needed when the tumor is large and/or has spread beyond the breast is far less expensive. The purpose of this presentation is to define and specify early detection methods and highlight risk reduction strategies.

### **POSTER # 183**

#### **Medication Administration Errors and Prevention: What Future Nurses Need to Know**

Roksolyana Gladoun

Faculty Mentor: Professor Barbara Griffiths  
Department of Nursing

Medical errors cost the United States over 3 billion dollars a year; money that could be better spent on healthcare initiatives to promote health and prevent illness. A staggering one and one half million people get injured each year as a result of medical errors. Understaffing, nurse fatigue, and disruption during medication administration are among the factors that contribute to medication error by nurses.

Many strategies have been initiated in an attempt to prevent medication errors. Among these are appropriate prescribing by the provider, use of the electronic health record to eliminate illegible orders, proper dispensing of medications that look alike or sound alike and distribution of medication through the use of Automated Dispensing Medication Cabinets. Research has demonstrated that educating staff on appropriate medication distribution and adherence to protocols and procedures has resulted in decreased medication errors.

Staff education and competency, patient education, using proper technique in medication administration and adequate communication between healthcare professionals will assist in eliminating medication errors. Education in nursing needs to start with the student nurse. A poster presentation on medication error prevention and a video power point for new student nurses on the appropriate protocol for medication administration will be presented.

**POSTER # 204**

**Infection Control in Costa Rican Operating Rooms**

Erika Herrera (Macaulay Honors College)

Faculty Mentor: Professor Regina Lama  
Department of Nursing

Procedures and protocols within operating rooms (ORs) related to infection control in Costa Rica are very similar to those within the United States.

Observations were conducted in Hospital Calderón Guardia, a publicly funded hospital and in the UNIBE clinic, a privately funded clinic. Both the ORs observed were traditional ORs and served only surgical functions. The UNIBE clinic performed more cosmetic surgeries while Hospital Calderón Guardia covered a more broad range of surgeries, including: orthopedics and trauma.

Both Hospital Calderón Guardia and the UNIBE clinic used similar methods to sterilize the OR and the equipment used during the surgery. Both facilities reuse scrubs and surgical tools. After use, scrubs are washed and later sent through the autoclave. However, the UNIBE clinic uses disposable shoe coverings, while Hospital Calderón Guardia uses shoe coverings. Surgical tools are first cleaned using concentrated bleach, packaged, and when they are needed, sent through the autoclave. Between every surgery the ORs in both facilities are washed using concentrated bleach and microfiber cloths.

The ORs in both facilities have positive pressure rooms.

There several differences between the two facilities in terms of OR unit structure and OR foot traffic. In Hospital Calderón Guardia, the sinks to scrub hands are not centrally located and scrub brushes are not always available. The UNIBE clinic's OR unit is smaller and the sinks used to scrub hands are located between the two ORs. Poor configuration of the OR unit and lack of proper tools can result in accidental contamination of the OR. Hospital Calderón Guardia's OR had a high amount of foot traffic moving through the OR—varying depending on the surgery being conducted. In the UNIBE clinic few staff members have access to the OR while a surgery is in progress. The increased traffic into the OR decreases overall control over contaminants.

**POSTER # 12**

**Nursing Staffing and Patient Safety**

Alexandra Imbesi (The Verrazano School)

Faculty Mentor: Cheryl Craddock  
Department of Nursing

Nurses play a vital role in the health care system. They protect, promote, and optimize patients' health while advocating for individuals, families, groups, communities, and vulnerable populations. For optimal patient care, nurses need to have an adequate amount of time to assess a patient's condition, design and implement a plan of care, and evaluate the patient's response. Safe, effective and ethical nurse care requires sufficient number of competent nurses available to provide care to the patients. Poor staffing patterns threaten the RNs' ability to provide effective and quality care and service expected by the public they serve. Inadequate staffing results in detrimental effects on patient safety. Poor patient outcomes associated with inadequate staffing include central line infections, pressure ulcers, medication errors, falls, urinary tract infections, and respiratory infections. Adequate staffing has been shown to reduce these nurse-sensitive outcomes including medical and medication errors, decrease patient complications, decrease mortality, improve patient satisfaction, reduce nurse fatigue, and decrease nurse burnout. Optimal nursing staffing in clinical setting is vital in order to provide optimal patient care.

### POSTER # 186

#### **Minimally Invasive Valve Replacement Surgery**

Alejandra Juarez, RN; Christina Dibella; Stacy Best

Faculty Mentor: Professor Regina Lama  
Department of Nursing

TAVR (Transcatheter Aortic Valve Replacement) is a minimally invasive procedure for high-risk patients with symptomatic aortic stenosis. These high risk patients would otherwise be too sick for the traditional valve replacement procedure which requires a sternotomy. A sternotomy is an open-heart procedure which requires cracking of the sternum and invading the chest cavity. TAVR gives these fragile patients the option of being able to replace their defective heart valve without undergoing the risks of a sternotomy. TAVR replaces the damaged valve without removing it from the body. The new valve is put in place of the old valve and with the use of a balloon pump, it is wedged into place. The valve is placed while the heart is still beating so no cardiac bypass is necessary. The Edwards SAPIEN transcatheter heart valve is made from biological material and mounted on a stent. Research shows that inoperable patients who undergo TAVR have improved heart function, survival rates and quality of life, compared to patients who do not receive a new valve and continue with standard medical therapy such as medicine to treat the aortic stenosis or a procedure to stretch the opening of the aortic valve. The new valve reaches the heart through the use of a catheter. There are three routes that the catheter can travel. The first is through the femoral artery, to the aorta, and into the heart. The second route is through an incision in the chest, under the ribs, and through the heart muscle at the apex. The last route is through the chest, through the aorta at the top of the heart. The route of the procedure depends on the health status of the patient and any preexisting conditions.

There are certain eligibility criteria for the TAVR procedure. The five factors that are considered are age, current health status, medical history, frailty, and condition of the heart. TAVR is Medicare and Medicaid eligible.

### POSTER # 109

#### **Bulimia**

Alejandra Juarez, RN; Robyn Schiff, RN; Matilda Okyere, RN

Faculty Mentor: Professor June Como  
Department of Nursing

Bulimia is an eating disorder requiring treatment to ensure physical and mental well-being.

Characterized as a mental health disorder, it predominantly affects women. Healthy People 2020 initiatives have included bulimia in their focus on improving the well-being and quality of life of individuals with mental health disorders as well as increasing access to screening and preventative measures. This is an area where nursing may have a major impact. The purpose of this poster is to present an overview of bulimia as a mental health disease process that has the potential to be positively affected by nursing interventions. A 2011 meta-analysis suggests that African Americans and Latinos exhibit a four-fold higher rate of bulimia than Caucasians. A 2014 report estimates economic loss due to eating disorders such as bulimia of over \$2 billion dollars annually. This can be greatly reduced by focusing on prevention and early intervention. Bulimia is difficult to diagnose and treat due to patient's nondisclosure. Fostering a safe, trusting environment, nurses can more confidently assess and identify risk factors and early warning signs of bulimia. This helps to decrease further associated long-term negative health outcomes. A nursing approach focused on prevention, education, and support promises a high incidence of recovery. Interventions aimed at promoting self-esteem and self-efficacy have proven to be effective in treating bulimia and preventing relapse. Screening should be used as a tool by school nurses and nurses in other settings during intake interviews as a means of prevention. Home visitation services are other appropriate supportive measures that are nurse-driven and which discourage patient remission.



**POSTER # 32**

**Comparing Primary Care from the U.S. to Costa Rica: Urgent Care vs. EBAIS**

Farzeen Kanwal (The Verrazano School)

Faculty Mentor: Professor Regina Lama  
Department of Nursing

Prior to visiting Costa Rica, I have spent a lot of time volunteering in urgent cares and emergency rooms during my high school and college career.

It was interesting to learn about the disparities in healthcare between the United States and Costa Rica especially when it came to the order in which healthcare treatment was provided. The Equipos Básicos de Atención Integral en Salud (EBAIS) which translates to “Basic Teams of Global Health Care” is the first level of care in Costa Rica. These clinics provide both primary and preventative health care to all of the individuals in a community.

A typical EBAIS serves about 4,500 people, and there are over 1,000 EBAIS clinics in Costa Rica. Each EBAIS has at a minimum: one general practice physician, a nurse’s assistant, a primary health care technical assistant, and a medical registry assistant (Palafox, 2011). Half Costa Ricans reside less than 1 km away from an outpatient care outlet and 5 km away from a hospital (Rosero-Bixby, 2004). The nurse makes home visits to those patients who are unable to make it to the EBAIS. Like America, the EBAIS is open for current medical problems, but does not perform ultrasounds, x-rays, blood tests, etc. (Vargas, 2013). Patients usually only go to emergency departments/hospitals when their problems become more severe. Compared to Costa Rica, an estimated 13.7 to 27.1 percent of all emergency department visits in America could take place at an urgent care center, generating a potential cost savings of approximately \$4.4 billion annually, according to a 2010 study in Health Affairs (Weinick, 2010). These statistics alone give an indicator of the difference in healthcare expenditure, and furthermore accounting for the disparities in healthcare.

This paper will compare and contrast the staff and services provided by the EBAIS in Costa Rica and urgent care in the U.S., as well as the impact these centers may have on patients and the community.

**POSTER # 25**

**Decreasing Discharges against Medical Advice in the Hospital Setting**

Georgiy Lyzhin (The Verrazano School)

Faculty Mentor: Professor Danna Curcio  
Department of Nursing

A significant amount of institutions are faced with patients that decide to leave the hospital and disregard the physician’s recommendation to stay.

This topic that is to be further explored is Discharge Against Medical Advice (DAMA) also referred to as Against Medical Advice (AMA). Against Medical Advice discharge, in which a patient chooses to leave the hospital before their treating physician recommends discharge, is a significant issue that hospitals are faced with on a daily basis and has become a concern among the medical community. At one local community hospital, on the chemical dependency nursing unit, there is a concern regarding patients leaving AMA. With increased mortality rates, increased readmission rates, high health care costs, and the associated stigmas, AMA is an important issue to be further explored. The main goal of this review paper is to identify an area in a current clinical setting that has failed to meet their desired quality initiative outcomes regarding AMA procedures. A literature review was done to fully understand the risks and complications that arise from AMA and the current suggestions that are implemented to reduce the amount of patients that decide to leave AMA. With the literature review complete, a Quality Improvement (QI) plan has been created for initiation on the chemical dependency unit. This plan will describe the steps for improvement within the current plan that is in place at the facility. Several disciplines that are involved, how often the data is to be reviewed, and how the outcomes to be measured will be explored, are identified within this QI plan. Finally, an analysis of the literature and the connection to the quality improvement plan will be formulated. To be capable of applying a new plan on a unit requires the possession of managerial and leadership skills, therefore a deeper analysis into topics related to nursing management and nursing leadership will be discussed in relation to this plan.

### **POSTER # 179**

#### **Indigenous Healing with Modern Edge**

Brittany Maniscalco

Faculty Mentor: Professor Regina Lama  
Department of Nursing

I was given the opportunity to visit a shaman at the Quitirrisi Indigenous Indian reserve. This experience intrigued me to learn more about about ancient culture. As the shaman spoke I realized how similar our core beliefs were, I also practice an ancient earth based religion and believe in the need for spiritual health, and the belief that certain people are born to be healers, not just for the mind and body but also the soul. The term shaman came from Siberia, however, today it is used as a general term given to healers across the world who follow ancient practices of connecting to a spiritual realm in an altered state of consciousness. People of indigenous tribes and cultures have believed and put into practice the balance of mind, body and spirit for thousands of years before the field of nursing; which took years before the holistic concepts of mind, body and spirit were incorporated into healing practice. Further, shaman healers of indigenous tribes possess knowledge in healing properties of medicinal plants that Western medicine has yet to understand. In particular, indigenous tribes of South America possess knowledge of the healing properties of plants and animals found in the Amazon that are thought to be potential cures for depression and other chronic illnesses such as autoimmune diseases, HIV and cancer. Many plants used in shaman rituals are claimed to have healing properties however, there is limited research data available. However, with pharmaceutical companies eager to access the next miracle drug for profit, deforestation, and tribe numbers decreasing significantly as elders pass and younger generations becoming more concerned with modernization, the indigenous culture and traditional shaman practices are quickly disappearing. Thus, it is the focus of the paper to reveal the benefits of shaman practice as well as the necessity to preserve the culture to further learn and incorporate ancient healing into modern health.

### **POSTER # 107**

#### **Postpartum Depression in Minority Women**

Estefania Merino Nando, RN; Marufa Adams, RN; Camile Cole-Crawford; Yasmin Euton, RN,

Faculty Mentor: Professor June Como  
Department of Nursing

Postpartum depression is a severe form of depression that occurs after childbirth. It includes grave mood swings, extreme irritability, fatigue, loss of interest in pleasurable events and difficulty performing daily activities. Research indicates that it is the most common complication of childbirth, yet it is the most under addressed. High rates of postpartum depression are discerned among minority groups such as African Americans, Hispanics, Middle Eastern and Asian women, which can negatively impact an infant's cognitive and social development. Certain cultural groups stigmatize postpartum depression preventing the appropriate screenings and treatments. The Affordable Care Act of 2010 urged the National Institute of Mental Health to increase support, education and research related to postpartum depression. The federal government authorized \$3 million dollars in 2010 to provide services to women at risk for postpartum depression. In New York City, the Medicaid program provides reimbursement for postpartum maternal depression screening using a validated referral format for diagnosis and treatment planning. Quality mental health screening of postpartum women and early interventions for the at-risk population are essential in minimizing the harmful effects of postpartum depression that can sometimes impact either the mother or her children or both. Primary prevention of stigmas associated with postpartum depression, early detection and prompt intervention is key. Educating patients about medication regimens including antidepressants, identifying stressors that can precipitate or exacerbate postpartum depression, and highlighting support systems within the community are a few of the nursing implications that are critical in ameliorating this serious postpartum mental health complication.

**POSTER # 163**

**Contraception: Oral vs. Injectable**

Hina Naveed; Stacey Appiah, RN;  
Ysmelda Dollison, RN; Pei Pei Wang, RN

Faculty Mentor: Professor June Como  
Department of Nursing

Oral contraception was first approved by the Federal Drug Administration in 1960 using a drug that had been released for use as a menstrual disorders drug approved of in 1957 called Enovid®. It then took ten years before contraceptive pills were allowed to be prescribed to unmarried women. The incidence of thromboembolism was high in women taking the oral contraceptive and so the dosing was adjusted and replaced with a lower dose estrogen and approved again in 1988. In 1992 the first hormonal contraceptive injection to prevent pregnancy was approved with the intent to avoid first passage through the liver as in oral preparations. It has been 56 years since oral contraception was first approved, and only 24 years since the initial approval of the injectable version. Contraception was taboo in many cultures and cultures around the world are still getting used to the idea of contraception. Historically the use of contraception had been punishable by law. Japan, for example, approved its use just in 1999. Fortunately, health care policies in the United States are mostly uniform, they cover most contraceptives, all of which are regulated and approved, and some may also cover education as part of public awareness campaigns. Cost effectiveness, quality, as well as safety are still being determined through research, however, the Centers for Disease Control ensures safety of both oral and injectable forms of contraception. As with any medication, education is extremely important regarding risk factors, side effects, actions to take if a dose is missed, as well as any referrals that should be made in order to ensure the best outcome for the patient. This is within the realm of registered professional nurses who are at the forefront of health promotion, illness prevention, and health maintenance endeavors within a holistic framework. The purpose of this poster is to inform the public about the risks versus benefits of oral versus injectable contraceptive use.

**POSTER # 162**

**Breastfeeding Clinics in Costa Rica**

Magalys Olivo

Faculty Mentor: Professor Regina Lama  
Department of Nursing

In Costa Rica lactation clinics are established throughout the country, 17 to be exact. Breastfeeding in Costa Rica is more of a norm in the culture than it is a requirement. As stated by the nurse in the lactation In Costa Rica lactation clinics are established throughout the country, 17 to be exact. Breastfeeding in Costa Rica is more of a norm in the culture, than it is a requirement. As stated by the nurse in the lactation clinic, 99% of the women are likely to breastfeed their babies. After the women give birth in a hospital they are given an appointment to visit this clinic within the first week of the child's birth. It is enforced that the baby is exclusively breast fed during the first six months of life. Breast milk is the nutrition a baby needs to develop a strong and healthy body (Guia Practica, Seguro Social). Costa Rica's universal health care system focuses on prevention. When implementing these lactation clinics they are supporting this concept by focusing on the early stages of the population. When an infant is breastfed there are substances that help them fight off a lot of diseases (Seguro Social, 2016). Breastfeeding is one of the best sources of infant nutrition and immunologic protection, which is beneficial to both the mother and child (Benjamin, 2011). In these lactation clinics mothers receive help until they can breastfeed independently. Therefore, nurses are great educators in these lactation clinics. They emphasize the great benefits of breastfeeding, different positions for the baby, as well as different methods other than the breast that is not a baby bottle. In the U.S. lactation clinics are not popular, but implementing the Ten Steps to Successful Breastfeeding and other initiatives are steps towards guiding hospitals to the goal of becoming Baby Friendly, breastfeeding supportive (MMWR, 2011). Many hospitals in the U.S. are in the process of becoming a Baby Friendly because there is evidence based research that supports that it is best for the baby and mom to stay attached for the first hours of birth along with breastmilk being the first nutrient the baby receives. This project will identify the importance of lactation clinics in Costa Rica and how it relates to primary prevention in their health care system.

### POSTER # 98

#### **Prone Positioning: An Alternative Treatment for ARDS**

Preston Daniel, RN; Rebeccajo Liu, RN;  
Romana Akter; Ewa Zwatzko, RN

Faculty Mentor: Professor Regina Lama  
Department of Nursing

We underwent this literature review project as a way to provide more information to our fellow nurses about a treatment option for critical ill patients with ARDS. To identify pertinent literature, we conducted a keyword search of the Cumulative Index to Nursing and Allied Health Literature (CINAHL) and MEDLINE Complete electronic databases, using the phrases proning, prone and ARDS, prone positioning, and prone positioning and ARDS. ARDS is an acute illness that leads to respiratory failure due to decreased gas exchange. We found that prone positioning improves oxygenation by providing a more homogenous distribution of stress and strain on the lungs during inspiration, improving ventilation-perfusion matching. The simple concept of the prone position can be complex and risky to put into practice when moving a critically ill patient. A highly trained staff is needed and may include physicians, respiratory therapists, nurses, and healthcare assistants. Although a time consuming process, the prone position can improve oxygenation in patients with ARDS without the risk of barotrauma found in standard treatment. We found that there is still a need for more research to provide protocols and guideline for ventilation strategies, time and duration of prone position, and outcome measurements while using the prone position. Nurses in critical care can help change the use of the prone position from a last-ditch effort to a standard of care for patients with ARDS.

### POSTER # 175

#### **Vector-born Diseases**

Veronica Suppa

Faculty Mentor: Professor Regina Lama  
Department of Nursing

This abstract focuses on three main vector born diseases in Costa Rica.

During the visit and observation of the different healthcare systems in this country, the students gained knowledge about vector transmitted diseases, which were unfamiliar to them due to the geographical differences of New York and Costa Rica.

The three main vector-born diseases that will be explained are Dengue, Chickungunya, and Zika Virus. These diseases were chosen since they are acquiring attention due to the many incidents occurring in this country.

While visiting the primary health facilities such as the EBAIS, the students were able to shadow an ATAP visiting different communities. They gained knowledge of assessment for prevention related to these diseases as well as information about symptoms of the disease process. The students observed communities that were underdeveloped and had unsatisfactory sanitation conditions, aiding in the expansion and development of these organisms.

Primary providers were able to educate the students about the water access and how it affects the prevalent issues discussed. In addition, information was gained through pamphlets that were given to patients during visitation.

Through current events, such as news and media, the students came to the conclusion that despite the preventative techniques implemented, there are still unknown factors that contribute to spread of vector-born diseases globally. This cultural immersion and global health study provided further insight to health issues and how this developing country engages in preparation for preventative measures in order to manage this current health problem.

**POSTER # 73**

**Cardiovascular Health in Costa Rica**

Derrick Tam

Faculty Mentor: Professor Regina Lama  
Department of Nursing

The correlation of cultural influences and the development of cardiovascular disease are at times shrouded in mystery due to various factors associated with cultural or societal influences. Cardiovascular disease is commonly caused by a number of factors such as atherosclerosis or build up of plaque within the arteries, hypertension, obesity, and poor dietary choices coupled with a sedentary lifestyle. This report serves as an insight into the cultural aspects of Costa Rica, understanding how their health care system promotes health and the prevention of disease with the use of local clinics like Equipo Básico de Atención Integral en Salud (EBAIS) and health care settings such as Hospital Dr. R.A. Calderon Guardia. We will examine in detail the cultural dietary choices of the locals as well as a current project undertaken at Hospital Dr. R.A. Calderon Guardia titled "Nursing Experience in Dealing with Patients with Heart Failure". This report outlines current practices used by nursing staff to assess their patients and monitor their progress, more importantly this report focuses on the ejection fraction percentage (EF%) of the heart and its ability to pump out enough blood to support bodily function. We will further examine current treatment plans such as cardiac implants, the promotion and benefits of exercise, quitting smoking and the effects of diet in cardiovascular health.

**POSTER # 77**

**Women and Angina**

Theresa Weissensee, RN; Eva Chiu, RN;  
Luis Espinal, RN; Vjolleca Ljubanovic,  
RN

Faculty Mentor: Professor June Como  
Department of Nursing

The number one cause of death among women in the United States is cardiovascular disease with one woman dying every 39 seconds. Angina, a common symptom from low blood flow, is characterized by chest pain spreading to different areas. This symptom is considered universal but not always applicable to women. Smaller vasculature of women causes them to have more microvascular disease accounting for differences in presentation. Studies suggest women tend to have more symptoms than men. Prodromal and acute symptoms of myocardial infarction, a sequelae of angina, also differ according to race. African American and Hispanic females with multiple comorbidities are more likely than Caucasians to have poor outcomes. This disparity in symptoms due to gender has become a focus of research in women's heart disease. The purpose of this poster is to highlight what those differences are. Generally women are under-treated and symptoms under-recognized causing 40% fatality rates for initial cardiac events. Health care reforms have resulted in increasing patient access to health care through insurance coverage providing annual well-women visits where preventive measures and education are provided thus promoting lifestyle modification and risk factor reduction. Improving the quality and safety of successful client outcomes is accomplished through interdisciplinary teams where the nurse has the ability to perform thorough assessments of histories, physical activities, medication record, culture, levels of anxiety and depression to prepare for any potential consequences. Facilitating patient education and family understanding guides them to recognize and seek care when signs/symptoms occur helping improve the quality and safety of patient outcomes. Openness to different cultural beliefs and values, with a corresponding willingness to incorporate the clients' cultural values in care whenever possible, would result in better outcomes when caring for diverse women with cardiovascular disease.

### OFFICE OF TECHNOLOGY SYSTEMS

CONFERENCE LOCATION: BOTTOM FRONT

#### **POSTER # 24**

### **Staten Island Fair Share: Indicators of Unfairness**

Elisa Csorba (Macaulay Honors College)

Faculty Mentor: Professor Michael Kress  
Office of Technology Systems

The Staten Island Fair Share study looks to explore whether Staten Island receives its fair share of resources. This study examines the allocation of city resources across the five boroughs. This is an analysis of financial and needs-based measures determined by the City Budget and city services for sustainability.

The needs-based criteria are to be individualized for each service provided by the city. For example, FDNY analysis will be measured by response times while snow removal will be measured by street hierarchies. The needs-based analysis may provide a better insight to assessing the “fairness” of current allocation of city resources. This information can be most beneficial to elected city officials with their initiatives to serve each borough.

This study will investigate two major categories that variables may fall under: fairness and unfairness. My poster will identify the indicators of unfairness which show the areas that describe and unequal distribution of resources. My colleague Ariana Zuberovic will determine which areas of study are in fact fair.

#### **POSTER # 79**

### **Go to High Ground**

Jennifer Freund (Macaulay Honors College)

Faculty Mentor: Professor Michael Kress  
Office of Technology Systems

During Superstorm Sandy, thousands of cars were flooded, leaving Staten Island residents without their sole method of transportation. In 2015, the Governor’s Office of Storm Recovery (GOSR) awarded CDBG-DR funding to the Research Foundation of the City University of New York (CUNY), on behalf of the College of Staten Island (CSI), to complete the “Go to High Ground” (GTHG) feasibility and planning study. The project, which was developed by CSI and the Staten Island NY Rising Community Reconstruction (NYRCR) Planning Committee, aims to create a wayfinding signage program, examine potential locations for automobile evacuation, examine legal and regulatory barriers, and conceptualize education campaigns tailored toward the borough.

GIS analysis will complement transportation modeling to analyze and develop a system of wayfinding signage paired with designated areas for automobile evacuation that encourages residents to ‘go to high ground’ during a storm surge event. Desktop analysis has utilized to identify the location of vehicles in flood prone areas and geolocate potential locations of on and off-street parking. Transportation modeling and demand analysis of traffic flows from flood prone areas on Staten Island to high ground parking locations will be done to evaluate car evacuation. Through this analysis we hope to uncover traffic congestion patterns and offer solutions on how to evacuate cars effectively during a flood evacuation.

**POSTER # 23**

**Staten Island Fair Share:  
Indicators of Fairness**

Ariana Zuberovic (Macaulay Honors  
College)

Faculty Mentor: Professor Michael Kress  
Office of Technology Systems

The Staten Island Fair Share study looks to explore whether Staten Island receives its fair share of resources. This study examines the allocation of city resources across the five boroughs. This is an analysis of financial and needs-based measures determined by the City Budget and city services for sustainability.

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This study will investigate two major categories that variables may fall under: fairness and unfairness. My poster will identify the indicators of fairness which show the areas that portray an equitable or better distribution of resources. My colleague Elisa Csorba will delve into the unfair indicators and the severity of the unequal distribution.

**DEPARTMENT OF PERFORMING  
AND CREATIVE ARTS**

CONFERENCE LOCATION: EAST LOUNGE

**POSTER # 182**

**P.S. 3 Mural Project**

James Merlis

Faculty Mentor: Professor Marianne Weil  
Department of Performing and Creative Arts

For my independent study project I plan to enlarge sketches created while meeting with Principal Myers and staff of Public School 3. I told them to take a survey with their 2nd grade classes on which scenery and characters they wish to see in their hallways. They contacted back with a list of characters and storybooks from their reading curriculum to help me create my sketches for the murals I plan to paint in their 2nd grade wing of the school. I will meet with Professor Weil during the semester to supervise my independent study and will submit a portfolio documenting my project by May 5th of 2016.

### **POSTER # 3**

#### **Demons Series and Drawings**

Ryan Nieves

Faculty Mentor: Professor Tracey Jones  
Department of Performing and Creative Arts

This presentation contains drawings from my personal conceptual studies in class as well as 3 oil paintings from my series title "Demons". This series is a study on the darkest side of man. Presenting a personal interpretation of the demons that walk among us in the real world, who hide behind the visage of humanity. The horrors of nightmare and the abominations we deal with in real life are shown in each piece depicted as they should be seen, as demons.

#### **DEPARTMENT OF PHYSICAL THERAPY**

CONFERENCE LOCATION: WEST LOUNGE

### **POSTER # 88**

#### **Structural Composition of Low Mineralized Bone Tissue**

Brandon Lei (Macaulay Honors College)

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

In pediatrics, treating diseases that affect the structural composition of mineralized bone tissue remains challenging in physical therapy and surgery intervention. Indeed, there is a lack of guidelines on how much load an affected bone can handle before a fracture occurs. In order to improve physical therapy and surgery dedicated to children, the goal of this study is to investigate how the mineral composition of cortical bone impacts its structural properties using histology. First, a group of animal samples (herring) were subjected to different amounts of mineralization. Next, these demineralized samples were prepared for histology using different stains, followed by embedding. The structural characteristics of these samples were compared with several stains in order to identify and qualify the components of herring bone, along with the effects of varying amounts of mineralization.



**DEPARTMENT OF POLITICAL  
SCIENCE AND GLOBAL AFFAIRS**

CONFERENCE LOCATION: UPSTAIRS WALKWAY

**POSTER # 184**

**Ecuadorians in Spain:  
Emigration and Return Migration**

Veronica Chan

Faculty Mentor: Professor Jane Marcus-  
Delgado

Department of Political Science and Global  
Affairs

In Ecuador, due to political turmoil and an economic crisis that started in the late 1990s, a massive wave of its citizens migrated to Spain because its economy was experiencing an unprecedented growth. Demand for unskilled labor was high and they fulfilled that niche—men mostly in construction and women in care work. Migration grew steadily until the Spanish government instituted a visa requirement for Ecuadorian citizens in 2003, which significantly decreased the number of new arrivals. Then, during the 2008 financial crisis, Spain was especially affected and the precarious economic situation that ensued led to the return of many Ecuadorians back to their homeland. The Ecuadorian state, thrilled with the turn of events, instituted policies that facilitated their return home, such as the implementation of the Welcome Home Plan, which provides them with employment assistance and business loans. My paper seeks to analyze the push and pull factors that have influenced Ecuadorian migration to Spain and back to Ecuador. The methodology involves statistics from the United Nations Population Fund, Spain's National Institute of Statistics, the Ecuadorian Embassy in Spain, Ecuador's National Institute of Statistics and Census, as well as scholarly articles and reports relevant to the subject. The conclusion explores how successful are economic factors and state policies in driving and affecting return migration.

**POSTER # 195**

**To Build or Not to Build? Is it  
Possible for New York City to  
Build a Movable Storm Surge  
Barrier in Its Harbor?**

Stanton Estwick

Faculty Mentor: Professor Aaron Gilbreath  
Department of Political Science and Global  
Affairs

The attitude New York City has to flood resilience is far different from the attitude of the Netherlands. The Dutch believe in prevention, and the New Yorkers believe in recovery. In Europe, the Dutch are underneath sea-level, and face constant flooding threats, but are well equipped and prepared due to their movable levee system. I argue that New York needs to look closer into the Dutch model of prevention, since they are more flood prone than we are, and better equipped to deal with a superstorm that New York is more susceptible to receiving. New York City recently released its comprehensive plan for protecting itself from rising sea levels and other hazards called "A Stronger More Resilient New York". One of the plans details why the city decided not to build Flood Levees in the waters surrounding it, which I believe is fallacy. I will look into the cities in the Netherlands, who do have flood levees in their waters, and compare their levees to our comprehensive plan from a financial and sustainable perspective. I will also detail why I feel the City has not done enough in its plan, and why the best way to approach rising sea levels is via the system of Flood Levees.

### **POSTER # 95**

#### **The Supreme Court and Hate Speech Jurisprudence; The Case against Banning Hate Speech**

Michael Marchese Jr. (The Verrazano School)

Faculty Mentor: Professor Michael Paris  
Department of Political Science and Global Affairs

The purpose of this honors thesis is to show how the Supreme Court has ruled in hate speech cases, but more importantly to show why hate speech should not be protected by the First Amendment. Hate speech is defined as any speech that can offend, threaten, or insult various groups of people and this speech often leads to violence. To show why this speech must be banned, there must first be an in depth look at several controversial cases, which is what this thesis aims to do. One of the controversial cases that will be used is *Snyder v. Phelps*. In this case, the members of the Westboro Baptist Church were protesting across the street from a military funeral and were saying many derogatory phrases, and holding picket signs with these phrases on them as well. In this case, the court ruled that they were indeed protected by the First Amendment. This honors thesis aims to show why this should not have been the case and why all hate speech should be banned in general. All of this will be done by taking an in depth look at the cases and supplying refuting arguments when the court did not ban this speech.

### **POSTER # 41**

#### **A Need for Accountability: Exploring the Phenomenon of Police Militarization**

Matthew Vuotto (Macaulay Honors College)

Faculty Mentor: Professor Michael Paris  
Department of Political Science and Global Affairs

This paper explores the phenomenon of “militarization of the police.” It looks at the concept of militarism and how it has been employed with the police and reviewed the historical development of the police force into the modern day. I reviewed the effects of federal programs, police training, and the public’s criminal justice demands of the time to ascertain the role the “War on Drugs” and “War on Crime” play in the adoption of aggressive police tactics and advanced equipment. Case studies are then used to illustrate some of the issues arising from police militarization and to look at the difference between what is legal and what the public or the police bureaucracy finds acceptable.

## DEPARTMENT OF PSYCHOLOGY

CONFERENCE LOCATION: BOTTOM  
CENTER/BACK

### POSTER # 115

#### **“Distal” Running and Digging Tasks in an African Naked Mole-Rat Colony**

Gino Agnese (The Verrazano School)

Faculty Mentor: Professor Dan McCloskey  
Department of Psychology

Our research goal is to define a typical behavior profile for cooperative behaviors in a colony of African Naked Mole-Rats in order to understand when and why some colony members show inadequate social behavior. Previous work from our lab has shown that there is a skewed division of labor, where the majority of colony work is accomplished by a small number of animals.

However, all of the tasks we have employed so far may be considered to be “proximal” behaviors, introduced to the existing housing environment, and performed in and around the colony nest. The present study includes the addition of a digging apparatus and running wheel to the colony, which may be considered “distal” behaviors because they are appended to the typical environment. We hypothesized that a separate group of animals would be recruited by these tasks. Our data collected so far confirms this hypothesis and supports the idea that colony tasks are specialized more by the task location than by the task type. Our future work will examine what brain systems might account for these separate behavioral phenotypes.

### POSTER # 155

#### **The Relationship between Posture and Perseveration within a Reaching A-not-B Task in Infancy**

Fatima Arman

Faculty Mentor: Professor Sarah Berger  
Department of Psychology

Infants learn to sit unsupported around age 5 months, which allows exploration and observation. Therefore, reaching is one of the major paradigms used to observe cognitive and motor behaviors in infancy. Sitting stage for 24 full-term, pre-crawling infants was determined by observing stability and duration of independent sitting without support. A reaching A-not-B task was used to look at the effects of “A” vs. “B” trials and soft vs. firm foam conditions on perseveration and compensatory posture strategies. Perseveration and compensatory posture strategies were greater on the “B” trial than the “A” trial and there was a significant interaction between condition and sit stage. Stage 2 sitters perseverated to a greater extent on soft foam than did Stage 3 sitters. Stage 3 sitters perseverated to a greater extent on firm foam than did Stage 2 sitters. Stage 3 sitters used more compensatory posture strategies in the soft foam condition. Eighteen of the infants also received a focused attention task (FA) to examine the relationship between attention and postural control. Eulerian video magnification (EVM) was used to process videos of the FA task to reveal subtle movements. Postural sway was coded during periods of focused & non-focused attention. Pearson correlations between extent of perseveration, compensatory strategies, and postural sway in the FA task revealed that postural sway in the non-focused condition was negatively correlated with perseveration and positively correlated with compensatory postural strategies in the soft foam “B” trial. Infants put more effort on the task by focusing less on sitting skill and more on the required memory and inhibition demands. To obtain more attentional resources to avoid perseverative behavior, more experienced sitters return to propping to fulfill high demanding task of reaching to new the location. Therefore, attentional resources depend on task difficulty and task difficulty depends on the skills required for the task

### POSTER # 166

#### Left Visual Field Biases in Relation to Social Development

Sabrina Bragerton-Nasert (The Verrazano School)

Faculty Mentor: Professor Jennifer Wagner  
Department of Psychology

Intuitively, humans are social beings that learn from their environment, and faces are particularly important for providing social and emotional information. Processing emotional information has been shown to be localized to the right hemisphere of the brain, which can explain why the left facial side is more emotionally expressive (Borod & Koff, 1990). Relatedly, humans also subconsciously attend more to the left visual field (LVF) when interpreting feelings, a phenomenon known as the LVF bias (Guo et al., 2009). Individuals with autism spectrum disorder (ASD) and those with characteristics associated with ASD, or the Broader Autism Phenotype (BAP; e.g., seen in some first-degree relatives), show deficits in emotion recognition and have disorganized processing of face stimuli. Further, difficulties in describing one's own emotional responses, known as alexithymia, have also been shown to limit a person's understanding of others' emotions. The present study will examine how typically-developing adults might show differences in the LVF bias while scanning emotional faces and how this scanning could relate to emotion understanding and the BAP. It is predicted that adults who show less of the LVF bias for emotional faces will also show more features of the BAP and alexithymia.

Participants were presented with images of happy, fearful, and neutral faces, as well as houses as control stimuli, in a semi-randomized order for 36 trials (8 of each type). Eye-tracking equipment measured where adults were looking while stimuli was presented. Areas of Interests will be drawn for the left and right side of the face and house stimuli to allow for analysis of the LVF bias for emotional vs. non-emotional stimuli. Analyses will focus on correlations between the level of LVF bias during emotional faces and alexithymia and BAP characteristics. This study aims to contribute to our understanding of how scanning patterns might relate to emotion understanding and social abilities.

### POSTER # 70

#### Does Peer-Mentoring Reduce Test Anxiety?

Ben Cheriyan

Faculty Mentor: Professor Kristen Gillespie-Lynch  
Department of Psychology

Test anxiety is a serious issue that many students face. Although it doesn't have a physical impact on an individual, it does impact a student's performance on an exam that they might have studied really hard for. Studies have shown that certain interventions might benefit people who suffer from test anxiety. The success of these interventions will result in a gradual decline in test anxiety. This study examines whether test anxiety is correlated to general anxiety, assessed with Spielberger's State/Trait Anxiety Scale and whether having the guidance of a peer-mentor will improve test anxiety, assessed with the Test Anxiety Inventory. Participants were in a mentorship program called Project REACH. College students with autism and other disabilities participated in the program from the beginning to the end of the semester. The students completed pre-tests in the beginning of the semester and post-tests after finals. The students met with a mentor once a week for an hour and/or participated in a weekly hour long group meeting.

One-on-one meetings included discussion of any issues the student might be struggling with which could include upcoming exams or papers. Group meetings consisted of theater modules about self-awareness and time management. My hypothesis was that test anxiety would be positively associated with general anxiety at baseline. As hypothesized trait anxiety (in the moment) and state anxiety (general) were positively correlated to test anxiety ( $p < .05$ ).

Also I hypothesized that participation in mentorship would reduce test anxiety by the end of the semester as students would gain more confidence when taking exams. Initially, results suggested no significant change in test anxiety and peer-mentoring from pre-test to post-test ( $p = .137$ ).

However, when experience with mentorship (new verse old students) was added into the model, a significant interaction was noted  $F(1,19) = 5.067$   $p = .036$ .

**POSTER # 93**

**Discrimination Task to Measure the Neural Correlates of Individual Recognition in African Naked Mole-Rats**

Blerim Cukovic

Faculty Mentor: Professor Dan McCloskey  
Department of Psychology

We hypothesize that the recognition of individuals in a group requires some activity of specific neuron populations in the hippocampus area of the brain. The hippocampus has already been shown to be highly sensitive to place and context, with separate populations of neurons encoding separate places and contexts. The goal of the present study was to develop a task that requires naked mole-rats to discriminate familiar (from their own colony) from unfamiliar (from a foreign colony) animals while keeping place and context constant. To test the ability of animals to perform this discrimination, two naked mole-rats from five different colonies were used, n=10. Initial discrimination training trials are underway using soiled bedding, where approaching the arm of a Y-maze containing foreign colony scent (the non-preferred arm) results in a food reward. Phase II will involve presenting a stimulus animal (familiar or unfamiliar) at a choice point where the rewarded arm will match the familiarity of the stimulus animal. Successful development of this discrimination task will allow us to ultimately monitor the activity of hippocampal neurons as naked mole-rat determine the familiarity of the stimulus animal.

**POSTER # 11**

**An Archival Analysis of Christian and Islamic Teachings on Rape**

Amanda DeSantis (The Verrazano School)

Faculty Mentor: Professor Darryl Hill  
Department of Psychology

The focus of this study was to determine whether ISIS' version of Islam and fundamental Christian groups are facilitating rape culture and victim blaming attitudes through analyzing online sources. This study used sources such as sermons, messages board comments on religious websites, and articles pertaining to rape and religion to support the hypotheses. Results suggest that ISIS' version of Islam and fundamental Christian groups do facilitate victim blaming attitudes and rape culture by sympathizing with perpetrators more than victims, policing the way women dress and act, giving women the responsibility of not getting raped, running patriarchal institutions, and by adhering to the Just World Belief. Future research should focus on other non-Western religions such as Hinduism because research on non-Western religions is scarce.

### **POSTER # 19**

#### **Community Characteristics and School Quality in Brooklyn Public High Schools**

Kasandra Dorce

Faculty Mentor: Professor Valkiria Durán-Narucki

Department of Psychology

This study will assess the relationship between school quality and community characteristics in Public High Schools in Brooklyn, New York City. School quality will be measured by existing Department of Education ratings on school environment and teacher quality. Community characteristics will include income level and ethnic composition of the district and will be obtained from the latest census data. The goal of the study is to determine whether community characteristics predict school quality. The specific hypothesis is that there is a correlation between community characteristics and school quality. A list of schools in Brooklyn has been assembled. One hundred and fourteen schools with complete data were included. Analysis will include variables relevant to school quality and community characteristics.

Results will try to determine whether there is a correlation between school level characteristics (school quality) and community level characteristics.

### **POSTER # 97**

#### **The Effects of Neck Length, Cadence Rate, and Motoric Control Ability to Withhold Pecking in Young and Elder Pigeons**

Alyssa Ferraro

Faculty Mentor: Professor Edward Meehan  
Department of Psychology

The physical characteristics of 24 White Carneaux pigeon's (*Columba livia*) musculoskeletal anatomy was assessed. In this study, we specifically focused on measuring the length of the pigeon's neck, their body weights and wing span. We used health based assessments, based on avian veterinarian protocols to examine these factors and compare young birds, elder birds and elders given taurine chronically (0.05%) in their water. The effects of age were evaluated as pigeon neck posture may be altered with age, in turn, resulting in atypical patterns of responding. We examined the suggested relationship between intracellular taurine level in skeletal muscle and phenotypical aspects of aging pigeons. The physiological measurements were further compared to results from an operant research study that utilized a Differential Reinforcement of Low Rate of Response schedule. The study was unique as it has the potential to integrate perspectives of physical therapy with principles of psychology to better understand the structure and functional relationships of taurine, and musculoskeletal contractions that support instrumental behavior.

**POSTER # 17**

**Are Timing Difficulties an Aspect of the Broader Autism Phenotype?**

Katherine Fitzgerald

Faculty Mentor: Professor Kristen Gillespie-Lynch  
Department of Psychology

Autistic-like traits in the general population are referred to as the broader autism phenotype (BAP). Past research has shown that timing difficulties are fundamental in autism. This study explores if timing difficulties associated with autism are also an aspect of the BAP. We employed a mock job interview with college students with autism, with non-ASD disabilities, and with no disability. The duration of response was recorded and related to a self-report measure of autistic traits. We found that heightened autistic traits were associated with longer duration responses. These findings suggest that timing difficulties associated with ASD may also be an aspect of the BAP. Also, the social-communicative difficulties that are associated with the BAP may also be partially driven by differences in timing. This indicates that one goal of any vocational intervention for individuals with the BAP should include training on how to concisely answer interview questions.

**POSTER # 39**

**Analysis of the Generalization of Emotional Prosody and Speaker Gender in Youth with Autism Spectrum Disorder**

Naomi Gaggi (Macaulay Honors College)

Faculty Mentor: Professor Patricia Brooks  
Department of Psychology

Individuals with Autism Spectrum Disorder (ASD) appear to have difficulties with linguistic skills and language comprehension, especially in recognizing emotions from tone of voice. This study used a custom-made computer-based video game to explore the generalization of emotional prosody across voices through pre-recorded sentences that varied in tone of voice (enthusiastic vs. grouchy) and speaker (male vs. female). Participants were youth (7 to 21 years old) with ASD (including lower functioning non-verbal and high functioning verbal individuals) and age-matched controls. Through trial and error, the youth learned which of two sentences was the target sentence that led to a video-reward; the rewards were delivered using an intermittent schedule of reinforcement to prepare participants for test sessions where generalization trials would be unrewarded. Participants completed the entire task twice with the target sentence spoken with grouchy tone of voice in one stimulus set and with enthusiastic tone of voice in the other set, with order counterbalanced. For each stimulus set, test sessions were initiated when the participant selected the target sentence rather than the distractor sentence at a response rate of 75%. After training to criterion, participants completed two test sessions, which included generalization trials that presented the sentences in an unfamiliar voice, different in gender from the sentences used in training. We predicted that the ASD group would have difficulties generalizing information about emotional prosody across speakers when compared to a typically developing group.

### POSTER # 57

#### **Neuronal Characteristics in the Medial Prefrontal Cortex of Social and Nonsocial African Naked Mole-Rats**

Naomi Gaggi (Macaulay Honors College)

Faculty Mentor: Professor Dan McCloskey  
Department of Psychology

The African naked mole-rat, *Heterocephalus glaber*, provides an unusual opportunity to study the areas of the brain responsible social behavior. In order to adapt to the harsh environmental conditions below ground in East Africa, naked mole-rats have adapted eusocial colonial hierarchy, where there is only one queen, multiple male breeders, and the rest are workers (Sansone et al., 2015). In the laboratory, we can study and manipulate the social interactions of naked mole-rats and measure how brain cells organize related to social experiences. One manipulation we have found to be particularly strong is social stress, which occurs when a naked mole-rat is isolated from its native colony. We compared two groups of naked mole-rats from the same colony, one exposed to social stress and one that remained in the eusocial colonial environment. After being in the environments for two weeks, we measured their fecal cortisol levels and then stained their brains with Golgi to see the dendritic spine count of neurons in the medial prefrontal cortex. In this study, we aim to assess the effects of social stress on the medial prefrontal cortex, which is a social area of the brain also involved in fear (Radley et al., 2004). Using advanced methods in behavioral tracking, physiological measurement, and measuring the morphology of nerve cells, we can begin to understand the complex “social brain”.

### POSTER # 68

#### **The Relationship between Event Ordering and Language Development in School-aged Children**

Alexandria Garzone, Jocelyn Philip, Yan Mei Nie (The Verrazano School), Farah Ahmad

Faculty Mentor: Professor Patricia Brooks  
Department of Psychology

The ability to experience and understand time is fundamental for daily living. As adults we have a relative sense of time and are able to plan ahead or recall events that have happened in the past. Though this ability begins to develop in the preschool years, children do not develop an advanced understanding of time until middle-childhood (Friedman, 2000; Moore et al., 2014), possibly because this is when they are attending school and becoming more independent in planning their own schedules. The current study expands upon previous work to examine the relationship between event ordering and language development. Thirty school-aged children (6-10 yrs) completed three event ordering tasks (Picture-Pointing Road, Time Labeling, and Months Relative-Order; adapted from Friedman, 2000) and a variety of standardized language assessments measuring global language ability, receptive vocabulary, receptive grammar, and reading skills, in addition to measures of executive function (working memory and verbal fluency) and nonverbal intelligence. Because language provides the structure for labeling events in our lives, it is hypothesized that language scores will predict event ordering ability. Additionally, it is hypothesized that developments in event ordering ability will be predicted by executive function skills because event ordering requires the ability to shift perspectives and imagine future events. The knowledge of time patterns allows individuals to know the distances of events in the past and future and form an organized timeline. These skills are important for managing the demands of daily life and may play a role in self-regulation, academic development, and independence.



**POSTER # 94**

**A Helping Hand**

Paige Gepes (The Verrazano School)

Faculty Mentor: Professor Steven

Zuckerman

Department of Psychology

When I started my new job as a paraprofessional, I was a substitute and assisted multiple children with many of their own individual needs. After experiencing many different cases, I began to question something. With so many different children, and so many specific diagnoses and needs of an individual child, how would one know how to handle each and every one of those needs? This was my goal. My goal was to cover as many possible diagnoses and situations that I could, and research the best ways to handle those cases. Luckily for me, I have my background as a psychology major which has assisted me greatly. With the help of my classes here at the College of Staten Island, as well as my own experiences and research, I chose to come up with a type of "handbook" for new paraprofessionals. I believe it would help any paraprofessional in order to have a better understanding of how they can assist a student to the best of their ability in a classroom setting.

**POSTER # 140**

**Video Magnification Reveals Postural Dynamics in Sitting in Typical and Atypical Development during Phases of Focused Attention**

Carmen Guallpa

Faculty Mentor: Professor Sarah Berger

Department of Psychology

Postural control supports motor coordination, increasing the opportunity for visual and manual exploration. However, in children with atypical development of motor skills, delays in independent sitting disrupt typical coordination of eyes and hands thereby altering exploration. This study had three aims: 1) investigating differences in postural sway of newly sitting infants during focused and non-focused attention to objects; 2) comparing postural dynamics of typically developing infants and infants with delayed development due to cerebral palsy (CP) or prematurity; and 3) determining the feasibility of using a novel methodology, Eulerian Video Magnification (EVM), to allow analysis of postural stability. 22 full-term infants, 7 born preterm with motor delay, and 9 with CP participated in this study. All were able to sit but not able to crawl. Infants sat on the floor and received three toys to explore for 90 s each. The EVM software magnified video to reveal motion difficult to see with the naked eye. This allowed frame-by-frame coding of postural sways in sitting for each group of infants. A 2 (attention type) x 3 (group) ANOVA revealed significant main effects for attention type ( $F=15.7, p<.01$ ) and group ( $F=52.4, p<.01$ ). We found a significant difference between typical and CP infants in the NFA condition. For FA, infants with CP (mean sway=3.05) swayed less than typical infants (mean sway=4.43) and premature infants (mean sway= 7.38). Infants with CP swayed less when they focused their attention because they used stiffness for support. Typical infants also swayed less during FA because they could attend to the toy and balance, whereas premature infants showed disorganized coordination of eyes, hands and limbs leading to less object exploration. Excessive postural sway showed lack of focused attention, which, in the long-term, could relate to later academic success. Ability to focus attention on novel objects is the foundation for accomplishing demanding tasks.

### **POSTER # 16**

#### **Investing in America's Great Wall: The Effects of Terror Management Theory on Political Preference**

Bianca Hernandez, Briana Rossiter

Faculty Mentor: Professor Florette Cohen  
Department of Psychology

This experiment looked to explore the effects of existential concerns on participants' political views and preferences. The goal of this study is to understand why Donald Trump—a person of power, who does not necessarily espouse ideals people whole-heartedly agree with, has become so popular and

is dominating the polls. Research in terror management theory (TMT; Greenberg Pyszczynski, & Solomon, 1986) previously demonstrated that existential concerns affected voter preferences in the 2004 presidential elections. To determine if fear of death is currently affecting people's political preferences, surveys were created to expose participants to one of two different conditions (pain or mortality salience). These surveys contained a series of open-ended questions that have proved to be affective in multiple studies testing TMT. Participants were then asked to rate Donald Trump on a scale to determine their overall views on the presidential candidate. Results revealed that exposure to MS significantly affected participants rating of the presidential candidate.

### **POSTER # 114**

#### **BrOT: Men in a Female-dominated Profession**

Katelynn Hotchkiss (The Verrazano School)

Faculty Mentor: Professor Darryl Hill  
Department of Psychology

This study examined some of the current issues male occupational therapists may face. Making up less than 10% of the field, little is known about what it's like to be a male occupational therapist. Thirty-two male and female occupational therapists participated in an online survey that asked about gender role beliefs and employment history. This study suggests the men in OT are "nontraditional" men in terms of gender roles beliefs, yet they face discrimination, fears of sexual harassment, and are often called on to do more traditional "masculine" work, such as physical labor and doing so-called "man things." Historical, economic, and sociological explanations have been proposed for the lack of men in OT, but the results of this survey point to gender role expectations as the primary reason.

**POSTER # 122**

**Cardiac Autonomic Activity as It Relates to Emotion Processing and Social Behavior**

Cailen Jennings (The Verrazano School)  
Faculty Mentor: Professor Jennifer Wagner  
Department of Psychology

Several studies have pointed to a relationship between the autonomic nervous system (ANS) and socio-emotional processing. One area of this research has focused on heart rate variability (HRV), which is the variation in time between heartbeats. Reduced HRV represents poor regulation of the ANS, which in turn, may influence social impairments. Related work has found reduced HRV in individuals with autism spectrum disorders, a group known for social difficulty. Another portion of the literature focuses on interoceptive accuracy (IA), or the perception of physiological activity (e.g., heart rate) as it relates to emotional experience. Work has shown that individuals scoring higher on IA experience emotions with heightened affective and physiological intensity.

The present study will evaluate how HRV and IA relate to social and emotional processing in typically-developing adults. Participants first completed a heartbeat perception task, and then baseline HR was measured for 5 minutes. Following the physiological recordings, subjects completed the Reading the Mind in the Eyes Test (RMET) and the Toronto Alexithymia Scale (TAS-20) as measures of emotion processing, as well as the Broader Autism Phenotype Questionnaire (BAPQ) and the Social Responsiveness Scale (SRS-2) as measures of social behavior. IA will be calculated as the mean percent difference between perceived and actual heartbeats during the heartbeat perception task, and mean HRV will be calculated across the baseline period.

Correlations will then be performed between the physiological measures and the questionnaires measuring social and emotional processing. Based on past work, it is hypothesized that individuals with high HRV and better IA will have stronger emotion processing skills and will be less likely to display traits related to social difficulty. This work will help us further understand how physiological activity contributes to variations in socio-emotional abilities.

**POSTER # 69**

**Potential Benefits of a Summer Transition Program for Incoming Autistic College Students**

Corinna Kostikas (Macaulay Honors College)

Faculty Mentor: Professor Kristen Gillespie-Lynch  
Department of Psychology

Peer-mentorship programs, including Project Reach at the College of Staten Island, are found across many college campuses. The aim of these programs is to help students adjust and excel in college. Project Reach focuses specifically on the adjustment and success of college students with autism and other disabilities. Another interesting feature of this program is its experimentation with making those who were once mentees, mentors. Although research can be found on peer mentoring, services for autistic college students are rare. Potential benefits of those with disabilities mentoring others with similar challenges has also rarely been studied. Through interviews with mentees and mentors and standardized measures that assess ASD knowledge, autism symptoms, trait anxiety, and disability pride, we used a mixed methods approach to evaluate potential benefits of a summer transition program for incoming autistic college students. Wilcoxon Signed Rank Tests identified changes from pre- to post-test in two key domains.

ASD knowledge increased from pre-test ( $M = 9.30$ ,  $SE = 4.88$ ) to post-test ( $M = 11.70$ ,  $SE = 4.76$ ;  $p = .036$ ,  $Z = -2.03$ ). Social Responsiveness Scale scores (a measure of autism symptoms where higher scores mean greater symptoms) decreased from pre-test ( $M = 67.30$ ,  $SE = 28.45$ ) to post-test ( $M = 62.40$ ,  $SE = 24.80$ ;  $Z = -2.10$ ,  $p = 0.04$ ). However, disability pride ( $p = 0.73$ ) and trait anxiety

( $p = 0.68$ ) did not change following participation in the program. I am currently transcribing and coding mentor and mentee interviews to gain greater insight about the participants' views and opinions of the program and whether changes in standardized measures co-occur with shifting perceptions of their identities and disabilities.

### POSTER # 30

#### **Development of a Coding System to Code Quality of Mother-Infant Interactions in High-Medical-Risk Infants at 13 Months**

Anh Le (The Verrazano School), Jediah Taytayon, Arfel Torno

Faculty Mentor: Professor Patricia Brooks  
Department of Psychology

Infant communicative development occurs in the context of meaningful interactions with caregivers. Preterm birth and perinatal CNS injury are risk factors for social communication delays. We investigated mother-infant interaction in a diverse sample of 29 high-medical-risk infants and their mothers, recruited from the Neonatal Intensive Care Unit of Richmond University Hospital for longitudinal follow-up. Infants' language abilities were measured at 22 months using the MacArthur-Bates Communicative Development Inventories, short-form. The current project examines maternal responsiveness to infants at 13 months of age under the guiding hypothesis that communicative development is enhanced when mothers respond contingently to their infants. We are developing coding schemes for the following infant behaviors: types of communicative gestures such as pointing and showing, imitations of maternal behavior, refusals, pretend play, speech-like vocalizations, and conventionalized gestures. We are also developing coding schemes for the following maternal behaviors: acknowledging the infant's communicative bid, naming objects, following the infant's lead, commenting on what the infant is attending to, and soothing (or distracting) the infant when frustrated or distressed. We are also coding for less optimal, intrusive maternal behaviors. We hypothesize that perinatal risk will impact the quality of mother-infant interaction at 13 months, which in turn will predict individual differences in language outcomes at 22 months.

### POSTER # 113

#### **The Influence of Temperament on Children's Emotional Face Processing**

Adriana Lupo

Faculty Mentor: Professor Jennifer Wagner  
Department of Psychology

Temperament refers to an individual's behavioral style that is based on the degree of emotional reactivity and self-regulation (Rothbart et al., 2001). Many researchers believe temperament to be stable across the lifespan, and thus can play an important role in social development.

Further, eye-tracking research has found that early attention to faces in infants can relate to later social-communicative development (Wagner et al., 2013). Using eye-tracking, the present study will examine how preschool-aged children attend to emotional faces and how this relates to aspects of temperament.

The present sample consisted of 23 children between the ages of 3 and 5 years. Children were shown five different emotional expressions (happy, fearful, sad, angry, and neutral) twice. Looking patterns were recorded with an SMI Red 120Hz eye-tracker. After the eye-tracking task, the primary caregiver of each child completed the Children's Behavior Questionnaire Short Form Version 1 (CBQ; Putnam et al., 2006), a tool used in developmental research to assess 15 dimensions of temperament in 3- to 7-year-old children.

To examine which facial features each child was looking at during the eye-tracking task, areas of interest (AOIs) will be drawn around the face, the eyes, and the mouth for each emotional face. The AOIs will be kept at a constant size for all five emotions to minimize differences in attention that could be attributed to a larger AOI for one emotion versus another.

Analyses of the CBQ will focus on three dimensions of temperament hypothesized to relate to emotional face processing: smiling & laughter, sadness, and attentional focusing. Mean scores for each of the three domains will be calculated, and then a series of correlational analyses will be run to examine associations between attention to emotional faces and these dimensions of temperament. This work will further our understanding of the influence of temperament on social attention.

**POSTER # 60**

**Gendered Expression Online:  
Exploring Gendered  
Communication on Facebook  
and in a Collaborative Editing  
Task**

Anthony Massa (Macaulay Honors  
College), Juny Rhee

Faculty Mentor: Professor Kristen Gillespie-  
Lynch  
Department of Psychology

Digital media use among college students has been increasing as advancements in technology give students collaborative online tools they can use to share ideas. Previous research has identified a gender gap within collaborative digital spaces such as Wikipedia, revealing that men dominate online resources (Glott et al., 2010; Hill & Shaw, 2013; Lam et al., 2011; Pande, 2011). Our research, under doctoral student, Christina Shane-Simpson, examines associations between gender and collaborative editing behaviors. We observed potential gender differences in online communication using a simulated collaborative environment. Through the use of the collaborative editing assignment, participants are told that prior “participants” of the study contributed through revisions and feedback on a simulated essay, when in fact, these revisions and feedback were simulated by the research team. By tracking participants’ edits, we observed their willingness to cooperate with other “participants” in the editing task. The volume and quality of the participants’ edits can then be used to identify gender-specific editing barriers and create solutions to make collaboration more effective. To our surprise, we found that women were more likely to delete characters from the fact-based section of the essay ( $M = 6.67$ ,  $SD = 5.98$ ) when compared with men ( $M = 5.07$ ,  $SD = 5.24$ ,  $p = .048$ ). The fact based portion of our essay is similar to the format seen within a Wikipedia page where the addition of subjective information is not allowed. Factors contributing to this relationship might be pro-social behaviors, editing experience, and age. Our analyses revealed that participants who deleted more reported more prosocial behaviors, ( $r(192) = .181$ ,  $p = .011$ ). As a follow-up study, we hope to hone in on additional factors that may be contributing to women making a majority of editing behaviors unlike previous studies’ results where men dominate online collaborative spaces.

**POSTER # 27**

**The Effect of a Social Identity  
Threat on Human Blood  
Pressure**

Bishoy Maximous (The Verrazano  
School)

Faculty Mentor: Professor Florette Cohen  
Department of Psychology

The present study extends on previous research to better understand the impact of social identity threat on physiological stress responses. This will be a pilot-study that will test social identity threat on religion by using Jewish and Muslim groups to see if they would experience the same effect as ethnic groups, specifically an Asian group. Blood pressure will be used to measure the levels of physiological stress responses. Participants

( $N=30$ ) in all three social groups received a scale that threatened their respective social identity. Measurement of systolic and diastolic blood pressure were recorded before and after the respective scales were given.

The findings showed heightened levels of blood pressure in all three social groups, indicating each group experienced a social identity threat at the same level. There was a significant increase in the pre-test and post-test showing that each participant experienced a social identity threat.

### **POSTER # 37**

#### **Sublimation: Does Arousal Affect Creativity?**

Patrick Mele (The Verrazano School)

Faculty Mentor: Professor Florette Cohen  
Department of Psychology

Sublimation is a theoretical process by which unconscious sexual impulses change into creative, educational, and pro-social means of expression.

College students were primed with sexually suggestive images. Following this exposure, their creative ability was measured using the Guilford's Alternative Uses Task. If sublimation occurs, then students who were subliminally exposed to the sexually suggestive images should have performed higher on the creativity tasks than those who were subliminally exposed to neutral stimuli. The data is currently being analyzed; results have not yet been confirmed.

### **POSTER # 124**

#### **Bounded with Love: The Gahvora Cradling Practice and the Infant's Home Environment**

Tamara Moseley (The Verrazano School), Roseana Jolly (The Verrazano School)

Faculty Mentor: Professor Lana Karasik  
Department of Psychology

Childrearing practices—sleeping, holding, and toileting—can promote or restrict infants' opportunities to move and explore, and thus can affect learning and development. Although studies have shown effects of childrearing practices on infants' motor skills, we know little about practices that shape infants' experiences. We describe and quantify a traditional cradling practice in Tajikistan: Caregivers use a "gahvora" cradle to sleep, toilet, and contain infants during the first two years of life. First, we will measure the extent of restriction infants experience when placed in the cradle and caregivers' daily use. Second, we will examine age-related changes in the process and practice of cradling. Third, we will characterize families' home environment to ask about infants' opportunities for learning.

Data were collected in Tajikistan. A researcher visited families in their home when infants were 0, 4, 8, 12, 16, 20, or 24 months of age. Using a time-diary method, the researcher asked caregivers about daily gahvora use.

To estimate daily gahvora use at each age, we will calculate accumulated hours from time-diaries. The researcher video-recorded mothers as they placed their infants in the cradle. We will code video-records to identify cradling steps and their duration to measure the process of cradling and extent of restriction. At the end of each visit, the researcher panned the camera in and around dwellings to capture the physical and social environment available to children.

This study will offer insights on ways in which childrearing practices around the world affect infants' experiences and opportunities for learning.

**POSTER # 46**

**Mental Health, Perceived Stress, and Ethnic Identity as Predictors of Academic Achievement in Hispanic College Women**

Melody Ortiz

Faculty Mentor: Professor Collette Chapman-Hilliard  
Department of Psychology

Prior research indicates an association between academic achievement, self-esteem, and ethnic identity among Hispanic students (Cavazos & Delucia 2009). Relatedly, Aunola and colleagues (2000) identified that students who are anxious, stressed, or feel helpless are more likely to show poor school achievement or performance. This research further suggested that girls are more likely to endorse low self-esteem when compared to boys (Aunola et al 2000). Despite some research that suggests Hispanic girls and women have unique experiences that may influence their academic achievement, there is limited research on this population. The current study examines mental health, perceived stress, and ethnic identity as predictors of academic achievement among Hispanic college women. Using a survey research design and a combination of convenience and snowball sampling procedures, data are being collected to determine the relationships between the above mentioned variables. The data will be analyzed in SPSS and the analytic plan includes: reporting baseline data (means and standard deviations), determining relationships among study variables using correlations, and utilizing multiple regression to identify predictors of academic achievement. Based on a review of the literature, I hypothesize that perceived stress and higher negative mental health symptoms will be associated with and predict poorer school performance. Additionally, I hypothesize that ethnic identity will predict higher academic performance in this population and be associated with fewer mental health symptoms and less perceived stress.

Unlike other studies to date, this research importantly contributes to the literature on Hispanic women and academic achievement, and has implications for educational and school counseling interventions that seek to support the academic success of Hispanic girls and women.

**POSTER # 47**

**Examining the Index of Race-related Stress across Three Non-Indictment Groups**

Melody Ortiz

Faculty Mentor: Professors Collette Chapman-Hilliard, Ellen-ge Denton  
Department of Psychology

Racism has recently garnered a lot of media, political and community attention. The present study focuses on the measurement of race-related stress and the stress experienced by those who are exposed to racially charged media events. The Index of Race Related Stress Brief (IRRS-B) (Ursey, 2009) has traditionally been used to capture the stress associated with experiences of racism encountered by African Americans in their daily lives. Over the course of a two-year period we recruited 625 African American participants who were exposed to the Michael Brown and Trayvon Martin non-indictment verdict (N=304), only the Trayvon Martin non-indictment verdict (N=102), and those who were not exposed to any non-indictment verdicts in the media (N=219). First, we test the 3-factor latent structure and confirm a stress-related experience defined as cultural, institutional, and individual racism in our total study sample.

Next we assess if there were any differences in the report of race related stress between our three non-indictment exposure groups. Participants were electronically administered the 22-item, IRRS-B and responses were recorded using an online data collection platform, then transferred in to SPSS. A CFA was employed to assess overall model fit and assess measurement invariance across the three groups. Our results confirm an adequate model fit of a 3-factor structure. Factor loadings and factor correlations are similar across the 3 non-indictment groups, indicative of measurement invariance. We see slightly higher factor loadings in the participant group exposed to both Trayvon Martin and Michael Brown non-indictment verdicts, in the media which may elude to a relationship between the experience of race-related stress and the amount of non-indictment verdicts participants are exposed to in the media. Studying race related stress can help mental health clinicians understand the psychological well-being of their African American clients.

### **POSTER # 108**

#### **The Time Course of Short-term Consolidation**

Johna Palladino

Faculty Mentor: Professor Timothy Ricker  
Department of Psychology

Memory is a widely researched subject as a whole, but specifically how we encode information and then retrieve it at a later time has been subject to many different experiments and varying theories. Memory consolidation itself is the process by which we gradually convert information from a brief easily disrupted state to a more durable and long-lasting memory. In our research, we look to provide more solid information about consolidation in the context of short-term memory and its processes. Specifically, we seek to understand the time course of short-term consolidation as it creates more durable traces. Some researchers have provided evidence which points to a time course of multiple seconds while others provide evidence which points to a fast process that completes in under a second. By demonstrating the temporal parameters of this fundamental memory process we hope to bring a better understanding of memory creation to the literature.

### **POSTER # 110**

#### **To What Degree Do Racial Identity, Minority-related Stressors, and General Help-seeking Attitudes Predict African American College Students' Willingness to Seek Help from a College Counseling Center?**

Valentina Pasquale, Samantha Cruz

Faculty Mentor: Professor Collette Chapman-Hilliard  
Department of Psychology

Research suggests that race-related factors such as identity and stress influence African American students' willingness to engage in community based counseling services. Townes and colleagues (2009) reported findings that African American students experiences in counseling were associated with minority-related stressors including feeling judged and having their cultural views rejected as well as were associated with racial identity attitudes. Additionally, minority stressors and identity factors have been reported to influence attitudes towards help-seeking (So, Gilbert, & Romero 2005). Despite research examining the interrelationships among racial identity, racial stress, and attitudes toward help-seeking in community based counseling settings, few studies have examined how these variables specifically influence African American students' college counseling center experiences. In the current study, we examined willingness to seek help from a college counseling center among African American students. Participants were self-identified African American undergraduate students (N = 178) recruited from a large university through a research participant pool. Participants were administered online questionnaires via a web-based data collection tool, Qualtrics. To determine predictors of African American students' likelihood of using a college counseling center, we utilized multiple regression. Preliminary findings demonstrate that both racial identity and degree of minority student stress are significant predictors of college counseling center use ( $p < .05$ ), while general attitudes toward help-seeking do not appear to be a significant predictor. These findings suggest that the significance and meaning of one's race and their experience of minority-related stress appear to have a greater influence on seeking help from a university counseling center than broad attitudes toward help-seeking.



**POSTER # 153**

**The Influence of Black History Knowledge on Black Students' Counselor Racial Preferences and Attitudes toward Help-seeking**

Emmanuela Petit-Frere

Faculty Mentor: Professor Collette Chapman-Hilliard  
Department of Psychology

Empirical and conceptual research highlights the importance of Black History Knowledge (BHK) for Black Americans as related to psychological health, clinical experiences, and attitudes toward seeking psychological help (Chapman-Hilliard & Adams-Bass, 2015; Fischer & Farina, 1995; Parham, & Helms, 1981). While there is substantial research on the relationships between racial identity and help-seeking, as well as counselor racial preferences, not enough research directly examines the role of BHK in predicting counselor preference and help-seeking. In the current study, 140 Black college students participated in an IRB approved online survey. To assess counselor preference and attitudes toward help-seeking, the Counselor Preference Scale (Parham & Helms, 1981) and Attitudes Toward Seeking Professional Psychological Help Scale (Fischer & Farina, 1995) were used. Black history knowledge and identity measures included: Black History Knowledge Questionnaire (Adams-Bass, 2012) and Multidimensional Inventory of Black Identity (Sellers et al., 1997; 1998). Participants also completed a demographic questionnaire. Findings indicate that, Black identity and BHK are associated with Black students' counselor racial preferences and were not associated with attitudes toward help-seeking. These findings indicate that BHK is important to understanding Black students' counseling preferences and experiences, and reaffirms the importance of racial identity as it relates to counseling. Implications for counseling and help-seeking among Black college students are further discussed.

**POSTER # 51**

**Exploring the Relationship between Implicit Statistical Learning and Language Development**

Jocelyn Philip, Alexandria Garzone, Fabienne Geara (The Verrazano School), Damelsa Hatmil, Danielle DeNigris, Rita Obeid

Faculty Mentor: Professor Patricia Brooks  
Department of Psychology

Implicit statistical learning is defined as the process of acquiring complex rules or patterns without awareness. It is believed to play a role in language, motor, and social-cognitive skill development. Research shows that individuals with Specific Language Impairment (SLI) display deficits in implicit statistical learning, thus understanding specifically what aspects of language are learned implicitly will play a key role in the development of interventions for children who have SLI. This study explores implicit statistical learning in relation to individual differences in different aspects of language development in a sample of 30 school-aged children (ages 6-10 years). Children completed assessments of comprehensive language abilities (expressive and receptive language), grammatical ability, and reading skills, in addition to measures of phonological short-term memory, motor dexterity, and nonverbal intelligence. The study tests predictions of the Procedural Deficit hypothesis (Ullman & Pierpont, 2005), that acquisition of motor skill and grammar typically occurs implicitly, by examining performance on the Serial Reaction Time task (a common measure of implicit learning) in relation to manual dexterity (measured using the Pegboard task), performance on a test of receptive grammar, and reading ability. We also test predictions of the Extraction and Integration framework (Erickson & Thiessen, 2015), which views implicit statistical learning as a mechanism of extracting distinct chunks of information (e.g., words from continuous speech). This framework predicts that a relationship will exist between implicit statistical learning (measured using the speech stream task), phonological short-term memory (measured using the nonword repetition task), and vocabulary size.

**POSTER # 43**

**The Effect of Working Memory Load on Impulsive Decision-making**

Jose Ramirez

Faculty Mentor: Professor Timothy Ricker  
Department of Psychology

We examine the effect of loading working memory on impulsive decision making. Working memory is the temporarily maintained information that is immediately available for ongoing thought. Individual differences in working memory capacity have been shown to be related to impulsive decision making, indicating that working memory may be needed to make better long-term decisions in the face of an immediate reward. Here we tax the working memory system by requiring participants to remember 0, 2, or 4 visual images, then ask them to choose between a small immediate reward or a long delayed. Our goal is to discover whether participants are more likely to choose the smaller immediate reward when remembering more visual images. If participants do have a higher preference for immediate rewards when working memory has been taxed by a higher memory load we will investigate the reason. This preference may be due to more impulsive behavior or to a higher proportion of random responses that are made without considering either reward option.

**POSTER # 22**

**“Never Meant to Belong”: The Effects of Terror Management Theory and DTA on Xenophobia and People’s Views on Immigration**

Briana Rossiter

Faculty Mentor: Professor Florette Cohen  
Department of Psychology

Through the use of multiple survey condition types we looked to explore the effect of TMT and xenophobia on people’s views of immigration. Research in terror management theory (TMT; Greenberg Pyszczynski, & Solomon, 1986) previously demonstrated that existential concerns can be assessed by accessing implicit death thoughts (Hayes et al., 2010). This experiment was designed to use open-ended survey questions in a manner that would expose participants to one of three different conditions (pain, death, or immigration), thus making them more susceptible to death thought accessibility (DTA). Participants were then instructed to complete a series of word fragments that would help determine the effects of each condition on DTA. Results revealed that both the death condition and the immigration condition operated in a similar manner to each other when participants were instructed to complete the word fragments. Implications and directions for future research will be discussed.

**POSTER # 62****Keep Calm and Carry, Mom: A Cross-cultural Comparison of Maternal Handling Practices**

Andrew Russo

Faculty Mentor: Professor Lara Karasik  
Department of Psychology

How infants are held and carried is a basic childrearing practice.

Researchers have shown that certain handling practices affect infant development presumably because how caregivers hold and position infants may affect opportunities to practice posture and balance. However, few studies adequately describe childrearing practices and often rely on maternal reports. In this study, we used observational methods to describe how frequently and for how long mothers hold and carry infants during normal daily routines. To maximize variability in handling practices, we examined mother-infant pairs from six cultural groups around the world (Argentina, Cameroon, Kenya, Korea, Italy, and U.S.). Mother-infant pairs were video-recorded for 1 hour at home; 72 video files were coded frame-by-frame to identify instances and durations of holding and mothers' position: stationary or moving when holding their infants. During instances of holding, we scored infants' posture and body stimulation. Finally, we considered whether mothers and infants engaged in bouts of joint attention.

Preliminary results show that all mothers tend to hold their infants and infants spend about 1/3 of the observation hour in arms. Group differences emerged when we compared duration of carrying: Italian mothers tend to carry their infants more than mothers from Cameroon and Kenya. However, when Cameroon and Kenyan mothers held their infants stationary, they shifted infants' posture often and provided more body stimulation compared to mothers from all other groups. Findings will offer insights into infants' daily experiences to practice balance and posture and consider childrearing practices from a cultural perspective.

**POSTER # 28****Cognitive Load with Continuous Working Memory Representations**

Aileen Sammartano

Faculty Mentor: Professor Timothy Ricker  
Department of Psychology

Working memory is the brain system that holds and manages information over a brief period of time. In the present work we examine whether the type of information held within working memory determines whether or not attention can be used to actively maintain memory traces held within this system. Past work has shown that, 1.) working memory for continuous orientation of a stimulus cannot be actively maintained through the use of attention and, 2.) that memory for materials such as letters, numbers, or words can be actively maintained through the use of attention. In the present work we present stimuli that vary in orientation for participants to remember, but only use canonical categorical angles (straight up, down, left, or right), rather than varying the orientation to be remembered continuously. We distract the participant's attention with a different secondary task during the interval between study and test to see if it affects working memory performance. If attention is used to remember all types of categorical memory items, then performance should be worse when the secondary task occupies attention for longer periods of time. If instead visual memories, such as that used to remember stimulus orientation, do not rely on attention, we should see no effect of the length of time of the secondary task because distracting attention does not affect maintenance processes.

### **POSTER # 74**

#### **The Psychology of Littering**

Jessica Scicchigno

Faculty Mentor: Professor Valkiria Duran-Narucki

Department of Psychology

Littering remains a problem in parts of Staten Island. A survey being conducted at the College of Staten Island explores people's opinions on the condition, location, and possible solutions to littering. This is a first look at the answers collected by this survey. Ninety first year college students participated by taking an online questionnaire. Early results indicate a support for fines for those who litter. These results also indicate a support for education in public schools, as well as increasing the amount of trash containers. According to respondents, littering is most common at bus stations, curbs, and parks. However, respondents also believed businesses should not be held responsible for litter related to products they are selling.

### **POSTER # 91**

#### **The Effect of Identity on Views of the Affordable Care Act**

Miriam Sedrak (Macaulay Honors College)

Faculty Mentor: Professor Florette Cohen  
Department of Psychology

America is undergoing a dramatic reform in the healthcare system, called The Affordable Care Act (ACA), also known as, ObamaCare. This law is in its early stages, and impacts most Americans, especially those receiving medical treatment. The law aims to increase the quality, availability, and affordability of private and public health insurance to over 44 million uninsured Americans through its many provisions, which include new regulations, taxes, mandates, and subsidies. With the upcoming presidential elections, candidates must take a stance on this topic.

In a recent study, (Carlson et al. 2014), data showed that with increased access to dependent health insurance coverage there was improved health for young adults aged 19–25 relative to the period before implementation.

Another study, (Sommers et al. 2015), showed that “the ACA's first 2 open enrollment periods were associated with significantly improved trends in self-reported coverage, access to primary care and medications, affordability, and health.” Although it has positive aspects, it also has negative aspects when it comes to taxes and other increased fees on people.

This proposal looks into a relationship between personal identity and views of the ACA. Personal identity is the concept people develop about themselves that evolves over the course of their lives. This may include aspects of life that people may have no control over, such as where they grew up or the color of their skin, as well as choices they make in life, such as personal beliefs and political party affiliation. This study looks to examine if a certain factors of identity correlate with approving or opposing ObamaCare.

This study will be conducted using a survey that will strategically ask participants about basic demographics, socioeconomic status, political views, health, and understanding of ObamaCare. This study is designed to uncover if there are any factors that impact an individual's view of The Affordable Care Act.

**POSTER # 26**

**The Effect of a Social Identity Threat on Human Cortisol Levels**

Stephanie Solanki (Macaulay Honors College)

Faculty Mentor: Professor Florette Cohen  
Department of Psychology

The present pilot study is an examination of the physiological effects of a social identity threat, namely how religious discrimination affects cortisol levels in humans. Cortisol is the stress hormone. The study looks to see if two religious samples, Jews and Muslims, will experience the same physiological stress response to a social identity threat as an ethnic group, specifically an Asian group. Twenty seven participants were asked to donate a sample of saliva as a pretest for cortisol analysis, given their respective discriminatory scale, and asked to donate another saliva sample as a post test cortisol measurement. The cortisol analysis on the saliva showed that the three groups all experienced the same level of cortisol increases after experiencing the social identity threat; however, the cortisol increase between the pretest and posttest is marginally significant because of the low number of participants available for this study.

**POSTER # 31**

**Individual Differences in Implicit Statistical Learning: Implications for Language and Cognitive Abilities**

Jadiah Taytayon

Faculty Mentor: Professor Patricia Brooks  
Department of Psychology

The ability to pick up regularities in the surrounding environment plays a significant role in life and is hypothesized to be a tool that the brain uses to organize and form expectations of upcoming events. Such ability is commonly called Implicit Statistical Learning (ISL), which can be defined as learning of complex rules and patterns without conscious awareness. ISL is a type of procedural learning that, according to the declarative/procedural model (Ullman, 2004), is an underlying mechanism for acquisition of rule-based cognitive skills, including the ability to process language.

Indeed, findings of existing research suggest that ISL may be linked directly to language learning outcomes such as the ability to segment continuous speech into discrete words, extract phonotactic regularities or patterns in speech, and process sentences accurately and efficiently. With regards to the relationship between ISL and non-rule based cognitive abilities such as, working memory and nonverbal intelligence, existing research provides mixed results. The current research uses an individual difference approach to test predictions of the declarative/procedural model—measures of ISL are predictive of language processing skills in adults. We aim to test a college sample of 100 adults on various tasks measuring implicit statistical learning, cognitive abilities (nonverbal intelligence and working memory) and language abilities (processing of complex sentences). The declarative/procedural model predicts that implicit statistical learning will correlate with individual differences in grammatical processing, but will be independent of working memory and nonverbal intelligence.

### **POSTER # 6**

#### **Sensory Memory Persistence and Working Memory Estimation**

Liya Thomas (The Verrazano School)

Faculty Mentor: Professor Timothy Ricker  
Department of Psychology

Working memory is the brain system that stores and manages information for a short period of time. Understanding how it interfaces other brain systems is crucial as it is implicated in many higher-order abilities such as reading, learning, maintaining task-relevant goals. Here, we examine the effects of perceptual persistence on visual working memory performance. We manipulate the availability of sensory memory, a form of perceptual persistence in the brain after a stimulus leaves the visual field, and observe the impact on visual working memory performance. The goal is to understand how sensory memory plays a role in tasks examining visual working memory. By varying the quality and onset time of a second masking stimulus we can reduce the availability of sensory memory. Our present findings expand upon previous work and resolve conflicting reports in the literature.

### **POSTER # 58**

#### **Skeletal Muscle Contraction and Energy Production in White Carneau Pigeons**

Kayara Umar

Faculty Mentor: Professor Edward Meehan  
Department of Psychology

Taurine has been shown to regulate brain excitability and is a partial agonist of the GABA (inhibitory) and NMDA (learning and memory) receptors.

In blood vessels, taurine displayed that it can activate GABA receptors and promote vasodilation. This increases blood flow to encourage higher intake of nutrients and oxygen support to muscles. Taurine was also revealed to influence Ca<sup>2+</sup> signaling, thereby regulating muscle constriction.

Taken together, we investigated indirectly how taurine supplementation (0.05% in daily drinking water) may have contributed to skeletal muscle contraction and energy metabolism in aged birds. We assessed this through standardized Avian Chemistry and CBC blood testing by looking for biological markers which coincide with skeletal muscle contraction and energy metabolism (Calcium, Glucose, CPK, and AST). We used an N=9 from the following groups: n=3 of birds treated with taurine, n=3 of an aged matched group which were not treated with taurine, and an n=3 of younger birds not used in the previous experiment.

Results suggest that utilizing Avian Chemistry and CBCs may be informative to establish correlation between biological markers regarding skeletal muscle contraction and energy metabolism and their relationship with cognitive behavioral experiments using operant procedures. Thereby, drawing such relationships of these biological markers may provide more clarity as to why some birds learn differently than others as a function of aging and potential for taurine to mediate age-related deficiencies in physiological mechanisms critical for behavioral action.

**POSTER # 116**

**The Relation between Disgust Sensitivity and Religious Fundamentalism**

Victoria Ventimiglia, Jessica Longo,  
Usfa Yaqoob

Faculty Mentor: Professor Russ Clay  
Department of Psychology

Disgust sensitivity is an evolutionary mechanism that motivates the avoidance of potential threats to survival, such as sources of contamination or disease. Prior research indicates that disgust sensitivity plays a significant role in people's social attitudes, specifically attitudes toward traditional, conservative views. For example, Terrizzi, Shook, & McDaniel (2013) found that higher levels of disgust sensitivity related to conservative attitudes such as strict adherence to social norms, in-group cohesion and out-group avoidance. Disgust sensitivity is thus broken down in to three specific sub-domains of disgust: core disgust (i.e., how susceptible a person is to experience the feeling of disgust), animal reminder disgust (i.e., disgust pertaining to wounds, physical injuries, and death), and contamination disgust (i.e., disgust pertaining foreign, harmful bodies entering the self and causing illness). Given these previous findings, religious fundamentalism (strict adherence to religious beliefs) was hypothesized to correlate positively with disgust sensitivity in the present study. Participants were presented with surveys to gauge these attitudes along with other opinions of the social world. Correlational analysis was used to investigate levels of core disgust, animal reminder disgust, and contamination disgust, respectively, in relation to religious fundamentalism. Results indicated a significant positive correlation between religious fundamentalism and contamination disgust ( $r=.016$ ) in-particular.

The implications of these findings regarding the possible evolutionary basis of fundamentalist religious views are discussed further.

**POSTER # 13**

**Past, Present, and Future Selves of College Students with Disabilities: Preliminary Findings from a New Six-word Autobiography Task**

Ewa Wawrzonek, Ashley Quinones

Faculty Mentor: Professor Patricia Brooks  
Department of Psychology

This poster introduces the 6-word autobiography task to examine how college students' identities are influenced by having a disability. Participants in a mentorship program for undergraduates with autism and other disabilities ( $N = 18$ ) produced 6-word descriptions of their past, present, and future selves in the context of interviews about college life. Students produced more positive present and future than past descriptions. The negativity of past descriptions was associated with students' tendency to label their disabilities.

**POSTER # 45**

**An Examination of the Relationship between Body Image and Eating Pathology among Veiled Muslim Women**

Nisma Zakira (Macaulay Honors College)

Faculty Mentor: Professor Collette Chapman-Hilliard  
Department of Psychology

In the United States, Muslim women represent an ethnically diverse and growing population of women who follow the teachings of the second largest religion practiced in the world, Islam (Bagby, Perl, & Fronchle, 2001). For many of these women, their faith-based practices influence day to day experiences and have been empirically linked to body image and eating concerns (Mussap 2009).

Among Muslim women, there is significant complexity in examining the relationship between body image and eating concerns given ethnic heterogeneity (Fenison & Meir, 2014) and the role of faith-based practices (Akgul, Derman, & Kanbur, 2014). Separately, other research suggests that ethnic identification is also related to body image and may be protective for women with regard to perceptions of body image and by extension must be considered in an examination of eating pathology. Using a survey research design and a combination of convenience and snowball sampling procedures, data are being collected to examine the interrelationships among ethnic identification, religious affiliation, perceptions of body image and eating pathology among Muslim women who veil or wear the hijab. Based on previous literature, I hypothesize that the participants' ethnic identification and religious affiliation will influence the relationship between body image and eating pathology. Identifying factors that impact eating pathology among Muslim women is significant to improving health and mental health outcomes for this population.

**POSTER # 61**

**Effects of Restricted Movement on Sitting and Object Exploration in Infancy**

Juliana Zaloom (Macaulay Honors College)

Faculty Mentor: Professor Lara Karasik  
Department of Psychology

Previous work shows that motor skills bring about new ways to engage with objects, and thereby, influence visual attention and cognition. For example, independent sitting frees infants' hands from supportive functions and has been related to gaze, reaching for objects, and object exploration. However, the reported findings are based on studies of Western infants whose caregivers encourage movement and exploration. We studied the effects of restricted movement on infant sitting and manual skills. Because it would be nearly impossible to study effects of restricted movement experimentally, we studied infants in Tajikistan where restriction of infant movement is the norm. Mothers use a "gahvora" cradle to contain infants throughout the day; in it, infants are laid supine with limbs and torso tightly bound.

Thus, infants' posture is limited to the supine position and limb movements are restricted.

We observed forty 8- and 12-month-old infants. Mothers reported infants' hours/day in the cradle. Infants were video-recorded in structured tasks assessing sitting and object exploration. Infants' sitting ability (pre-sitter, sitter) was determined by observing instances of independent sitting for a minimum of 30 seconds. I measured durations of manual contact with toys and scored object-specific actions. I will examine relations between sitting proficiency and diversity of actions on objects and investigate whether extent of daily restriction affects motor and object skills.

These findings will support previous work highlighting cascading effects of motor skills on visual-manual exploration. Moreover, the findings will address how cultural practices influence infants' everyday experiences and, in turn, affect development.



**DEPARTMENT OF SOCIAL WORK**

CONFERENCE LOCATION: UPSTAIRS WALKWAY

**POSTER # 127**

**Parental Involvement in Adolescent Drug Treatment**

Nancy Bello

Faculty Mentor: Professor Nafees Alam  
Department of Social Work

Substance abuse does not discriminate. It is a prominent issue in many homes today and unless we begin to incorporate family units into adolescent substance abuse programs, the cycle is likely to continue and family dynamics, likely to remain volatile. Literature shows that parental involvement in adolescent drug treatment programs can serve as positive motivation for adolescents to comply with, and adhere to, the stages of treatment. However, the family unit needs to be in a healthy state of mind themselves in order to help their adolescents stay on track with their recovery. The student researcher has conducted seven qualitative interviews with parents of adolescents in a drug treatment program. Each parent was asked a set of questions guiding them to reflect back on how their adolescent arrived at residential treatment, up until their discharge date, focusing on aftercare treatment and parental involvement throughout. This project will be ready for presentation by early April.

**POSTER # 123**

**Whether or Not a Duration of 28 Days within a Treatment Program is a Sufficient Period of Time for Addicts to Overcome Their Addiction and Maintain Sobriety from Substance Use/Abuse**

Shannon Crisalli

Faculty Mentor: Professor Nafees Alam  
Department of Social Work

Substance use/abuse is a prominent health issue in the United States. As a result, knowledge of risk factors and conditions that interfere with recovery are of extreme importance. The consequences of substance abuse affect not only the individuals battling addiction, but the support systems around them as well. The student researcher observed that most findings within literature in the field of substance abuse focuses on the prevalence and patterns of substance use/abuse relapse. Very little is documented on duration of treatment in relation to maintaining sobriety. This contributed to the student researcher's intention of conducting this study to explore whether or not a duration of 28 days within a treatment program is a sufficient period of time for an addict to overcome their addiction and maintain sobriety from substance use/abuse moving forward. The student researcher used a qualitative research approach and conducted 8 semi-structured interviews with individuals who have maintained sobriety for 7 or more months. The data has been collected and will be analyzed before March 18th. The research project as a whole will be completed by early April.

### **POSTER # 78**

#### **In the Future: Non-Profit Senior Administration**

Mitchell Harris (The Verrazano School)

Faculty Mentor: Professor Nathalie Weeks  
Department of Social Work

The purpose of this internship was to experience working for a multi-million dollar non-profit community organizing agency. The original understanding of the role in this internship was to work with other agencies within Staten Island and organize a campaign focused on challenging the stigma against individuals with mental illness. After a short amount of time it became clear that the original role for the internship was different from what reality shortly revealed. This change in understanding towards a role as an intern is not dissimilar to initial expectations in other internships with non-profits in the past. The benefits of having multiple roles and assignments throughout what will add up to 480 hours is the broader exposure towards the various components within a non-profit. The result of this internship has led to a more well-rounded understanding of a social service department within a non-profit. It has included client interactions, reviewing files to prepare for an audit, creating case notes, participating in a grant writing process, contacting other organizations to collaborate on projects and more. All of these components of the internship have provided a stronger knowledge base in putting the pieces together for how a multi-million dollar non-profit agency is run.

### **POSTER # 40**

#### **Discrimination at Work against People Living with HIV**

Roberto Melendez

Faculty Mentor: Professor Nafees Alam  
Department of Social Work

The purpose of this research is to explore workplace discrimination encountered by people living with Human Immunodeficiency Virus (HIV) or those who have developed Acquired Immunodeficiency Syndrome (AIDS), despite the fact that the Americans with Disabilities Act (ADA) is designed to protect all disabled individuals from workplace discrimination. Although the ADA is meant to protect these individuals, it can be very difficult to accomplish this mission given the dynamic workplace environment, made even more volatile under the open acknowledgement of the aforementioned diagnoses within the setting. This research will be conducted at the Gay Men's Health Crisis (GMHC), located in Midtown, NYC. This research will be conducted in a mixed methods design, which includes both qualitative and quantitative approaches, using convenience sampling as well as purposive sample.

**DEPARTMENT OF SOCIOLOGY  
AND ANTHROPOLOGY**

CONFERENCE LOCATION: UPSTAIRS WALKWAY

**POSTER # 181**

**Gender Portrayals in the Harry Potter Series**

Samantha Bright

Faculty Mentor: Professor Saadia Toor  
Department of Sociology and Anthropology

Children and Young Adult fiction is a burgeoning industry today and as such has become an important way in which young people in our society are socialized into norms. Reading fiction involves seeing the world through another's eyes, and in young adult/children's fiction it involves a very strong identification with the protagonists who are usually also children or young adults. Within young adult fiction, the genres of fantasy and science fiction have become increasingly popular. Here the 'reality' that is depicted is either literally a different world or another (invisible) dimension within our own or a dystopian future. The characters either have magical or supernatural powers, or are supernatural creatures such as vampires, werewolves, and fairies. This heightens the pleasure of reading and helps broaden young people's imagination because the world being explored is a fantasy world. However, just because the worlds depicted are different, and the characters magical does not mean that readers are not being socialized into important social norms especially those around gender, sexuality, race, class as well as ideas of justice and equality.

For this research project I will be exploring the subconscious lessons about gender and equality embedded in the immensely popular book series Harry Potter written by J. K. Rowling. In particular I am interested in researching how gender roles and gender issues play out within the book series, by analyzing the portrayal of girls/women in this series - from the social and professional roles they occupy in the Hogwarts School for Magic and within the alternative world of magical creatures created by the author. I will compare this to the way men/boys are portrayed, and the lessons about gender norms and gender equality that these portrayals might reflect.

**POSTER # 185**

**Dominant Ideology in Media**

Michelle Coderias

Faculty Mentor: Professor Saadia Toor  
Department of Sociology and Anthropology

During the courses (SOC 200 Sociology Theory and SOC 360 Work and Leisure) I have taken with Professor Toor, I am learning of the concept of dominant ideology which is, from what I've learned I feel as if it has opened a new way of thinking in terms of seeing the way information is represented and implemented to the public.

Dominant ideology in Karl Marx's theory is that most societies share values and attitudes determined by politics and philosophies of people who possess power and influence. It claims the values, morals, and ideals in each period of history are defined by economic and political leaders.

According to Marxist theory, this type of ideology surfaced during the late 19th century as countries entered the industrial era as capitalist societies. Marx stated people with economic power controlled society and used people without power for personal gain. All dominant ideologies help the more fortunate, called the bourgeoisie, take advantage of the less fortunate, referred to as the proletariat. The balance of power (or imbalance) stays constant through these ideals, Marx believed. This theory explained that laws, educational opportunities, and class division kept the lower class in its place. Working people are not conscious of being treated unfairly or being used because dominant ideology is accepted all the time].

Marx believed these factors important to a functioning society to maintain the status quo.

Professor Toor stated that in more recent times this ideology is becoming more apparent in news and on the internet through social media. My independent study would focus around exploring how dominant ideology is embedded in those forms of communication and how much it is influencing our way of thinking.

### **POSTER # 9**

#### **Discrimination and Violence**

David Jordon

Faculty Mentor: Professor Jean Halley  
Department of Sociology and Anthropology

“We ought not to act and speak as if we were asleep”

The words of Marcus Aurelius can be applied to so many aspects of daily life, but never were they so true, as one ponders the plight of those who are members of the LGBT community. The United States has a reputation as the leader of the so-called Sociology & Anthropology its own citizens, particularly because of race or gender identity? When it comes to discrimination and violence against someone because of the color of their skin or gender identity, we tend to turn a blind eye. Every day, someone, somewhere in the United States is victimized because of attributes they possess that don't appeal to the status quo. However, only the most horrendous incidents are reported, and for the most part, the general public is unaware of just how rampant the problem is.

In 2013, three hundred and forty-four transgender individuals were victims of violence perpetrated against them, with thirteen being murdered.

What's sad is the fact that, outside of their community, and the company of those who love them, they are greeted with ignorance by society as a whole. All of the above bring us to the purpose of this report: to bring to light the sufferings of transgender individuals across the United States, not limited to, but in particular those of color.

### **DEPARTMENT OF WORLD LANGUAGES AND LITERATURES**

CONFERENCE LOCATION: UPSTAIRS WALKWAY

### **POSTER # 44**

#### **Hala El Madrileño: How Social Factors Affect Language Variation among Spanish Speakers in the Community of Madrid**

Steven Arriaga (The Verrazano School)

Faculty Mentor: Professor Edward Miller  
Department of World Languages and Literatures

Although the term “Castilian Spanish” is used by Occidental regions to distinguish the variety of Spanish spoken in the Iberian peninsula from their own, its usage is much more specific when used within Spain where it refers to the Spanish variety used in central and northern parts of the country. Due to its three other nationally recognized languages, the dialects of Spanish spoken in this part of Europe are directly influenced by Catalan, Basque and Galician, resulting in other dialects such as Galician Spanish and Basque Spanish. However, other dialects exist as well within other autonomous communities including Aragonese Spanish, Andalusian Spanish and Canarian Spanish. Therefore, to generalize these varieties as simply “Castilian Spanish” would diminish the vast complexity of the Spanish language in its mother country, its dialects providing substantial information regarding the relationship between social factors and language change.

A prominent dialect of Spanish known as *el español madrileño*, or Madrilenian Spanish, is used in the autonomous Community of Madrid and is distinguished through several speech variations used by its speakers such as *yeísmo*, the aspiration of /s/ and the use of *leísmo*, *laísmo* and *loísmo*.

However, studies have shown that specific social factors bring about and affect other speech patterns that are not associated with all speakers of Madrilenian Spanish. Through this study, I will reveal the language variations that are exhibited by Spanish speakers in Madrid and what social factors determine who uses these speech patterns, whether it pertains to their age, gender, profession, level of education or another sociolinguistic factor.

**Undergraduate Conference on Research, Scholarship, and Performance— Faculty Mentors**

<b>FACULTY MENTOR</b>	<b>DEPARTMENT</b>	<b>POSTER</b>
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Nafees Alam	Social Work	40, 123, 127
Jane Alexander	Engineering Science and Physics	71
David Allen	Curriculum and Instruction	151
Christopher Anderson	Media Culture	2
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Cesar Arena-Mena	Biology	105, 142
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Heidi Bertels	Management	75
Jason Bishop	English/Linguistics	50, 54, 55, 101, 119
Deborah Brickman	Accounting and Finance	187
Patricia Brooks	Psychology	13, 30, 31, 39, 51, 68
Paolo Cappellari	Marketing	138
Collette Chapman-Hilliard	Psychology	45, 46, 47, 110, 153,
Soon Ae Chun	Marketing	137, 138
Russ Clay	Psychology	116
Florette Cohen	Psychology	16, 22, 26, 27, 37, 91
June Como	Nursing	77, 107, 109, 163, 170
Cheryl Craddock	Nursing	12
Danna Curcio	Nursing	25
Ellen-ge Denton	Psychology	47
Deborah DeSimone	Curriculum and Instruction	164
Barbara DiCicco-Bloom	Nursing	169
Robert Domanski	Computer Science	112
Valkiria Duran-Narucki	Psychology	19, 74
Abdeslem El Idrissi	Biology	1, 52, 96, 152, 198
Jimmie Fata	Biology	84, 103, 131
Mark Feuer	Engineering Science and Physics	111
Deborah Franzblau	Mathematics	128, 136, 157
Daniel Gagliardi	Marketing	8
Patricia Galletta	Accounting and Finance	82, 148
Aaron Gilbreath	Political Science and Global Affairs	195
Kristen Gillespie-Lynch	Psychology	17, 60, 69, 70
Max Gottlieb	Accounting and Finance	172

## Faculty Mentors

### Undergraduate Conference on Research, Scholarship, and Performance— Faculty Mentors (cont.)

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Barbara Griffiths	Nursing	183
Jianying Gu	Biology	89, 180
Natacha Gueorguieva	Computer Science	35, 36, 42
Jean Halley	Sociology and Anthropology	9
Darryl Hill	Psychology	11, 114
Shi Jin	Chemistry	65
Tracy Jones	PCA	3
Lana Karasik	Psychology	61, 62, 124
Judit Kerekes	Curriculum and Instruction	132
Chang-Min Kim	Engineering Science and Physics	20, 21
Charles Kramer	Biology	83
Michael Kress	OTS	23, 24, 79
David Kritt	Educational Studies	90
Michal Kruk	Chemistry	171
Regina Lama	Nursing	32, 73, 98, 162, 175, 179, 186, 204, 205
Lihong Connie Li	Engineering Science and Physics	156
David Lindo-Atichati	Engineering Science and Physics	200
Charles Liu	Engineering Science and Physics	147
Nancy Liu-Sullivan	Biology	72
Sharon Loverde	Chemistry	59, 67
Alan Lyons	Chemistry	118, 146
Irina Lyublinskaya	Curriculum and Instruction	192, 193
Nora Maloney	Nursing	120
Michael Mandiberg	Media Culture	207
Jane Marcus-Delgado	Political Science and Global Affairs	184
Tara Mateik	Media Culture	76
Dan McCloskey	Psychology	57, 93, 115
Edward Meehan	Psychology	58, 97
Edward Miller	World Languages and Literatures	44
Shaibal Mitra	Biology	10, 125
Eugenia Naro-Maciell	Biology	66, 100, 117, 154, 158
Paul Orzechowski	Accounting and Finance	139
Michael Paris	Political Science and Global Affairs	41, 95
Reece Peck	Media Culture	7, 64, 99
Jonathan Peters	Accounting and Finance	203

**Undergraduate Conference on Research, Scholarship, and Performance— Faculty Mentors (cont.)**

<b>FACULTY MENTOR</b>	<b>DEPARTMENT</b>	<b>POSTER</b>
Greg Phillips	Biology	86, 106
Sebastien Poget	Chemistry	15, 176, 177
Krishnaswami Raja	Chemistry	14, 34, 49, 102
Dwight Richards	Engineering Science and Physics	18, 63, 81, 144, 189
Timothy Ricker	Psychology	6, 28, 43, 108
Irving Robbins	Engineering Science and Physics	81
William Schreiber	Engineering Science and Physics	121
Chang-Hui Shen	Biology	33
Deborah Sturm	Computer Science	134
Shiryn Sukhram	Biology	149
Valerie Tevere	Media Culture	130
Saadia Toor	Sociology and Anthropology	181, 185
Jennifer Wagner	Psychology	113, 122, 166
William Wallace	Biology	80
George Wang	Accounting and Finance	174
Gail Wangel	Curriculum and Instruction	29
Nathalie Weeks	Social Work	78
Marianne Weil	Performing and Creative Arts	182
Cindy Wong	Media Culture	53
Ting Yuan	Curriculum and Instruction	194, 196
Sarah Zelikovitz	Computer Science	168, 178
Shuqun Zhang	Computer Science	206
Xiaowen Zhang	Computer Science	104
Zhanyang Zhang	Computer Science	38, 85, 160
Shuiqin Zhou	Chemistry	87
Alan Zimmerman	Marketing	48, 129, 145, 165, 173
Steven Zuckerman	Psychology	94

**Research Paper Presentations—Student Scholars**

<b>P A P E R # / S T U D E N T</b>	<b>M E N T O R</b>	<b>D E P A R T M E N T</b>
4 Nicholas Anderson	Cary Karacas	Political Science and Global Affairs
199 Mario Bnyamin	Li Ge	Engineering Science and Physics
92 Justin Cleveland	Suha Kudsieh	English
159 Valeriana Dema	Maria Bellamy	English
161 Andrew Ferrera	Judit Kerekes	Curriculum and Instruction
209 Thomas DePaulo	Cary Karacas	Political Science and Global Affairs
202 Stephen Giglia	David Lindo-Atichati	Engineering Science and Physics
56 Virgil Hayes	Barbra Teater	Social Work
135 Kellie Joseph	Ananya Mukherjea	Sociology and Anthropology
190 Jemima Alice Kadima	Alejandra Alonso	Biology
210 Vincent Quinn	Cary Karacas	Political Science and Global Affairs
197 Rachel Smalle	Mark Lewis	History
126 Nicolette Varvaro	Barbra Teater	Social Work



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

POSTER # / STUDENT	FACULTY	DEPARTMENT
96 Cynthia Odili Actie	Abdeslen El Idrissi	Biology
187 Michael Adamo	Deborah Brickman	Accounting and Finance
107 Marufa Adams, RN	June Como	Nursing
115 Gino Agnese	Dan McClosky	Psychology
68 Farah Ahmad	Patricia Brooks	Psychology
201 Malik Ahmed	Ahmed Zaghloul	Biology
98 Romana Akter	Regina Lama	Nursing
59 Mohamed Al Sharif	Sharon Loverde	Chemistry
103 Mohamed Al Sharif	Jimmie Fata	Biology
85 Awwab Ali	Zhanyang Zhang	Computer Science
189 Radfan Alokab	Dwight Richards	Engineering Science and Physics
103 Dina AlSharif	Jimmie Fata	Biology
120 Alysa Andrade	Nora Maloney	Nursing
83 Kirill Antonov	Charles Kramer	Biology
163 Stacey Appiah	June Como	Nursing
155 Fatima Arman	Sarah Berger	Psychology
173 Sabrina Arminante	Alan Zimmerman	Marketing
44 Steven Arriaga	Edward Miller	World Languages and Literatures
134 Jesus Arteaga	Deborah Sturm	Computer Science
102 Mohammad Bazrouk	Krishnaswami Raja	Chemistry
127 Nancy Bello	Nafees Alam	Social Work
178 Claudia Bergeron	Sarah Zelikovitz	Computer Science
186 Stacy Best	Regina Lama	Nursing
101 Frank Bonadonna	Jason Bishop	English/Linguistics
144 Danaelle Bonheur	Dwight Richards	Engineering Science and Physics
85 David Brady	Zhanyang Zhang	Computer Science
166 Sabrina Bragerton-Nasert	Jennifer Wagner	Psychology
181 Samantha Bright	Saadia Toor	Sociology and Anthropology
145 Victor Brown	Alan Zimmerman	Marketing
142 Jasmine Calle	Cesar Arena-Mena	Biology
111 Thomas Carbonaro	Mark Feuer	Engineering Science and Physics
76 Kristine Carrano	Tara Mateik	Media Culture
129 Andreas Chamberas	Alan Zimmerman	Marketing
184 Veronica Chan	Jane Marcus-Delgado	Political Science and Global Affairs
200 Sunny Chen	David Lindo-Atichati	Engineering Science and Physics
70 Ben Cheriyan	Kristen Gillespie-Lynch	Psychology

## Student Scholars

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

POSTER # / STUDENT	FACULTY	DEPARTMENT
36 Matthew Chiappa	Natacha Gueorguieva	Computer Science
77 Eva Chiu	June Como	Nursing
205 Sonanika Chouhan	Regina Lama	Nursing
169 Stephanie Clemente	Barbara DiCicco-Bloom	Nursing
185 Michele Codérias	Saadia Toor	Sociology and Anthropology
107 Camile Cole-Crawford, RN	June Como	Nursing
55 Juliana Colon	Jason Bishop	English/Linguistics
157 Alessia Colonna	Deborah Franzblau	Mathematics
123 Shannon Crisalli	Nafees Alam	Social Work
66 Peter Cruciata	Eugenia Naro-Maciel	Biology
110 Samantha Cruz	Collette Chapman-Hilliard	Psychology
24 Elisa Csorba	Michael Kress	OTS
134 Ivan Cuenca	Deborah Sturm	Computer Science
93 Blerim Cukovic	Dan McCloskey	Psychology
98 Preston Daniel, RN	Regina Lama	Nursing
142 Winnie Darius	Cesar Arena-Mena	Biology
170 Agatha Czarina DeMeo, RN	June Como	Nursing
144 Valjeta Demirovic	Dwight Richards	Engineering Science and Physics
51 Danielle DeNigris	Patricia Brooks	Psychology
2 Nicole DeRosa	Christopher Anderson	Media Culture
11 Amanda DeSantis	Darryl Hill	Psychology
81 Nick DeVitto	Irving Robbins and Dwight Richards	Engineering Science and Physics
112 Nick DeVitto	Robert Domanski	Computer Science
186 Christina Dibella	Regina Lama	Nursing
3 Jaclyn DiBello	Chang-Hui Shen	Biology
87 Christopher DiForte	Shuiqin Zhou	Chemistry
163 Ysmelda Dollison	June Como	Nursing
15 Kwaku Domfe	Sebastien Poget	Chemistry
174 Meng Dong	George Wang	Accounting and Finance
19 Kasandra Dorce	Valkiria Duran-Narucki	Psychology
136 Almira Duka	Deborah Franzblau	Mathematics
152 Noorhan Elhaddad	Abdeslem El Idrissi	Biology
198 Noorhan Elhaddad	Abdeslem El Idrissi	Biology
134 Hassan Elsherbini	Deborah Sturm	Computer Science
77 Luis Espinal	June Como	Nursing
195 Stanton Estwick	Aaron Gilbreath	Political Science and Global Affairs

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POSTER # / STUDENT	FACULTY	DEPARTMENT
107 Yasmin Euton, RN	June Como	Nursing
1 Mardia Fahnbuleh	Abdeslem El Idrissi	Biology
97 Alyssa Ferraro	Edward Meehan	Psychology
18 Stephanie Finnegan	Dwight Richards	Engineering Science and Physics
65 Christine Fisher	Shi Jin	Chemistry
17 Katherine Fitzgerald	Kristen Gillespie-Lynch	Psychology
20 Daniel Fontana	Chang-Min Kim	Engineering Science and Physics
156 Daniel Fontana	Lihong Connie Li	Engineering Science and Physics
121 Karl Francis	William Schreiber	Engineering Science and Physics
20 Tyler Franco	Chang-Min Kim	Engineering Science and Physics
156 Tyler Franco	Lihong Connie Li	Engineering Science and Physics
79 Jennifer Freund	Michael Kress	OTS
39 Naomi Gaggi	Patricia Brooks	Psychology
57 Naomi Gaggi	Dan McCloskey	Psychology
170 Aldrich Gamboa, RN	June Como	Nursing
194 Alexa Garetano	Ting Yuan	Curriculum and Instruction
139 John Garigliano	Paul Orzechowski	Accounting and Finance
51 Alexandria Garzone	Patricia Brooks	Psychology
68 Alexandria Garzone	Patricia Brooks	Psychology
51 Fabienne Geara	Patricia Brooks	Psychology
63 Kevin Geocos	Dwight Richards	Engineering Science and Physics
134 Kevin Geocos	Deborah Sturm	Computer Science
94 Paige Gepes	Steven Zuckerman	Psychology
133 Bishoy Gerges	Probal Banerjee	Chemistry
183 Roksoyana Gladoun	Barbara Griffiths	Nursing
134 Gabriel Goldstein	Deborah Sturm	Computer Science
147 Andrea Gonzalez	Charles Liu	Engineering Science and Physics
52 Alexis Gorin	Abdeslem El Idrissi	Biology
140 Carmen Gualpa	Sarah Berger	Psychology
142 Justin Gurses	Cesar Arena-Mena	Biology
78 Mitchell Harris	Nathalie Weeks	Social Work
105 Aminat Haruna	Cesar Arena-Mena	Biology
142 Aminat Haruna	Cesar Arena-Mena	Biology
51 Damelsa Hatmil	Patricia Brooks	Psychology
16 Bianca Hernandez	Florette Cohen	Psychology
204 Erika Herrera	Regina Lama	Nursing

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<b>POSTER # / STUDENT</b>	<b>FACULTY</b>	<b>DEPARTMENT</b>
114 Katelynn Hotchkiss	Darryl Hill	Psychology
9 Catherine Hunter	Reece Peck	Media Culture
191 Rahman Hussaini	Probal Banerjee	Chemistry
12 Alexandra Imbesi	Cheryl Craddock	Nursing
5 Shumaila Irshad	Deepa Aravind	Management
122 Cailen Jennings	Jennifer Wagner	Psychology
72 Monnique Johnson	Nancy Liu-Sullivan	Biology
124 Roseana Jolly	Lana Karasik	Psychology
9 David Jordon	Jean Halley	Sociology and Anthropology
109 Alejandra Juarez	June Como	Nursing
186 Alejandra Juarez	Regina Lama	Nursing
160 Muhand Jumah	Zhanyang Zhang	Computer Science
32 Farzeen Kanwal	Regina Lama	Nursing
8 Salematou Keita	Daniel Gagliardi	Marketing
38 Patrick Kevorkian	Zhanyang Zhang	Computer Science
198 Shahrukh Khan	Abdeslem El Idrissi	Biology
188 Dhana Kindelpitiya	Zaghloul Ahmed	Biology
102 Regina Klimchuk	Krishnaswami Raja	Chemistry
69 Corinna Kostikas	Kristen Gillespie-Lynch	Psychology
149 Rachel Koyfman	Shiryn Sukhram	Biology
35 Austin Krauza	Natacha Gueorguieva	Computer Science
131 Justine Kwok	Jimmie Fata	Biology
29 Julie LaGrotta	Gail Wangel	Curriculum and Instruction
67 Dennis Lam	Sharon Loverde	Chemistry
165 Veronica Averyl LaManna	Alan Zimmerman	Marketing
128 Martin Lapinski	Deborah Franzblau	Mathematics
89 Rin Zhi Larocque	Jianying Gu	Biology
30 Anh Le	Patricia Brooks	Psychology
88 Brandon Lei	Jean-Philippe Berteau	Physical Therapy
137 Frank Lennon	Soon Ae Chun	Marketing
134 Stan Leskov	Deborah Sturm	Computer Science
63 Jeffrey Li	Dwight Richards	Engineering Science and Physics
14 Xue Qing Liang	Krishnaswami Raja	Chemistry
49 Xue Qing Liang	Krishnaswami Raja	Chemistry
98 Rebecca Liu, RN	Regina Lama	Nursing
77 Vjolleca Ljubanovic	June Como	Nursing
177 Pablo Llerena	Sebastien Poget	Chemistry

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POSTER # / STUDENT	FACULTY	DEPARTMENT
116 Jessica Longo	Russ Clay	Psychology
206 Danielle Lopez	Shuqun Zhang	Computer Science
113 Adriana Lupo	Jennifer Wagner	Psychology
25 Georgiy Lyzhin	Danna Curcio	Nursing
125 Michael Maisano	Shaibal Mitra	Biology
143 Michael Maisano	Zaghloul Ahmed	Biology/Neuroscience
179 Brittany Maniscalco	Regina Lama	Nursing
64 Victoria Manzo	Reece Peck	Media Culture
95 Michael Marchese Jr.	Michael Paris	Political Science and Global Affairs
60 Anthony Massa	Kristen Gillespie-Lynch	Psychology
21 Michael Matteo	Chang-Min Kim	Engineering Science and Physics
27 Bishoy Maximous	Florette Cohen	Psychology
206 Ivan Mazo	Shuqun Zhang	Computer Science
84 Christina Mazza	Jimmie Fata	Biology
37 Patrick Mele	Florette Cohen	Psychology
40 Roberto Melendez	Nafees Alam	Social Work
107 Estefania Merino Nando, RN	June Como	Nursing
111 Julio Mezarina	Mark Feuer	Engineering Science and Physics
189 Mirani Ali Raza	Dwight Richards	Engineering Science and Physics
170 Marina Mironova, RN	June Como	Nursing
10 Christopher Morales	Shaibal Mitra	Biology
75 Anthony Morelli	Heidi Bertels	Management
124 Tamara Moseley	Lana Karasik	Psychology
164 Amna Mukhtar	Deborah DeSimone	Curriculum and Instruction
163 Hina Naveed	June Como	Nursing
80 Vincent Nicoletta	William Wallace	Biology
68 Yan Mei Nie	Patricia Brooks	Psychology
86 Yan Mei Nie	Greg Phillips	Biology
117 Yan Mei Nie	Eugenia Naro-Maciel	Biology
3 Ryan Nieves	Tracy Jones	PCA
51 Rita Obeid	Patricia Brooks	Psychology
207 Chigozie Okoye	Michael Mandiberg	Media Culture
109 Matilda Okyere	June Como	Nursing
162 Magalys Olivo	Regina Lama	Nursing
46 Melody Ortiz	Collette Chapman-Hilliard	Psychology
47 Melody Ortiz	Collette Chapman-Hilliard and Ellen-ge Denton	Psychology

## Student Scholars

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

POSTER # / STUDENT	FACULTY	DEPARTMENT
171 Susannah O'Shea	Michal Kruk	Chemistry
108 Johna Palladino	Timothy Ricker	Psychology
110 Valentina Pasquale	Collette Chapman-Hilliard	Psychology
132 Cassandra Perrina	Judit Kerekes	Curriculum and Instruction
153 Emmanuela Petit-Frere	Collette Chapman-Hilliard	Psychology
118 Svitlana Petrashchuk	Alan Lyons	Chemistry
51 Jocelyn Philip	Patricia Brooks	Psychology
68 Jocelyn Philip	Patricia Brooks	Psychology
53 Jennifer Pierce	Cindy Wong	Media Culture
49 Nicole Pillarella	Krishnaswami Raja	Chemistry
176 Peter Principe	Sebastien Poget	Chemistry
142 Andrea Puno	Cesar Arena-Mena	Biology
90 Sabrina Qasim	David Kritt	Educational Studies
188 Yohanna Quezada	Zaghloul Ahmed	Biology
13 Ashley Quinones	Patricia Brooks	Psychology
34 Vyshnavi Rajendra	Krishnaswami Raja	Chemistry
102 Vyshnavi Rajendra	Krishnaswami Raja	Chemistry
43 Jose Ramirez	Timothy Ricker	Psychology
142 Victor Ramirez	Cesar Arena-Mena	Biology
81 Jose Ramirez-Garofalo	Irving Robbins and Dwight Richards	Engineering Science and Physics
18 Rachel Revzin	Dwight Richards	Engineering Science and Physics
60 Juny Rhee	Kristen Gillespie-Lynch	Psychology
42 Adriana Robledo	Natacha Gueorguieva	Computer Science
16 Briana Rossiter	Florette Cohen	Psychology
22 Briana Rossiter	Florette Cohen	Psychology
71 Sam Rubin	Jane Alexander	Engineering Science and Physics
62 Andrew Russo	Lana Karasik	Psychology
106 Penina Safier	Greg Phillips	Biology
28 Aileen Sammartano	Timothy Ricker	Psychology
168 Swathi Satty	Sarah Zelikovitz	Computer Science
180 Oluwatoyin Saula	Jianying Gu	Biology
151 Victoria Sax	David Allen	Curriculum and Instruction
109 Robyn Schiff	June Como	Nursing
74 Jessica Scicchigno	Valkiria Duran-Narucki	Psychology
91 Miriam Sedrak	Florette Cohen	Psychology
158 Joshua Seidman	Eugenia Naro-Maciel	Biology

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POSTER # / STUDENT	FACULTY	DEPARTMENT
193 Stephanie Sheehan	Irina Lyublinskaya	Curriculum and Instruction
192 Omri Shick	Irina Lyublinskaya	Curriculum and Instruction
106 Adam Shonubi	Greg Phillips	Biology
138 Dennis Shpits	Soon Ae Chun and Paolo Cappellari	Marketing
72 Norhan Sobhi	Nancy Liu-Sullivan	Biology
26 Stephanie Solanki	Florette Cohen	Psychology
149 Mohamed Soliman	Shiryn Sukhram	Biology
50 Jessica Spensieri	Jason Bishop	English/Linguistics
10 Veronika Stefanishina	Shaibal Mitra	Biology
175 Veronica Suppa	Regina Lama	Nursing
203 Timothy Sweeney	Jonathan Peters	Accounting and Finance
84 Palwasha Syar	Jimmie Fata	Biology
73 Derrick Tam	Regina Lama	Nursing
30 Jediah Taytayon	Patricia Brooks	Psychology
31 Jediah Taytayon	Patricia Brooks	Psychology
196 Jennifer Terranova	Ting Yuan	Curriculum and Instruction
100 Sean Thatcher	Eugenia Naro-Maciel	Biology
104 Rebecca Thayil	Xiaowen Zhang	Computer Science
6 Liya Thomas	Timothy Ricker	Psychology
30 Arfel Torno	Patricia Brooks	Psychology
82 Rachel Torres	Patricia Galletta	Accounting and Finance
172 Alima Toure	Max Gottlieb	Accounting and Finance
154 Tina Tran	Eugenia Naro-Maciel	Biology
58 Kyara Umar	Edward Meehan	Psychology
81 Tanya Vasyleva	Irving Robbins and Dwight Richards	Engineering Science and Physics
116 Victoria Ventimiglia	Russ Clay	Psychology
33 Fina Vitale	Chang-Hui Shen	Biology
41 Matthew Vuotto	Michael Paris	Political Science and Global Affairs
148 Kelly Walsh	Patricia Galletta	Accounting and Finance
163 Pei Pei Wang	June Como	Nursing
7 Crystal Warner	Reece Peck	Media Culture
13 Ewa Wawrzonek	Patricia Brooks	Psychology
119 Tara Weiburg	Jason Bishop	English/Linguistics
77 Theresa Weissensee	June Como	Nursing
146 Michael Weitzman	Alan Lyons	Chemistry

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

P O S T E R # / S T U D E N T		F A C U L T Y	D E P A R T M E N T
130	Samayra Williams	Valerie Tevere	Media Culture
200	Tyra Williams	David Lindo-Atichati	Engineering Science and Physics
116	Usfa Yaqoob	Russ Clay	Psychology
54	Nadia Zaki	Jason Bishop	English/Linguistics
45	Nisma Zakira	Collette Chapman-Hilliard	Psychology
61	Juliana Zaloom	Lana Karasik	Psychology
48	Luyao Zheng	Alan Zimmerman	Marketing
23	Ariana Zuberovic	Michael Kress	OTS
98	Ewa Zwatzrko, RN	Regina Lama	Nursing







